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SEQUENCE LISTING

<110> MURDIN, Andrew D.; OOMEN, Raymond P; and WANG, Joe

<120> Chlamydia antigens and corresponding DNA fragments and uses thereof

10 <130> 77813-51

<140> PCT/CA99/00992

<141> 1999-10-28

<150> US 60/106034

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 Arg Phe Leu Leu Ile Ser Leu Val Pro Thr Leu Ser Met Ser Asn Leu
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| | | | | 585 | | | | 590 | | | | | 595 | | | | |
| | gac | tac | ttt | atg | aat | acc | aat | ttc | gca | aag | acc | tac | gca | gga | tct | tta | 1939 |
| | Asp | Tyr | Phe | Met | Asn | Thr | Asn | Phe | Ala | Lys | Thr | Tyr | Ala | Gly | Ser | Leu | |
| | | | 600 | | | | | 605 | | | | | 610 | | | | |
| 50 | cgt | ttg | cag | cac | gat | gct | tcc | cta | tac | tct | gtg | gtg | agt | atc | ctt | tta | 1987 |
| | Arg | Leu | Gln | His | Asp | Ala | Ser | Leu | Tyr | Ser | Val | Val | Ser | Ile | Leu | Leu | |
| | | 615 | | | | | 620 | | | | | 625 | | | | | |
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Ser Asn Ile Asp Ala Thr Thr Ala Ser Gly Ala Ala Ile Gly Ser Glu
105 110 115

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Ala Ala Asn Lys Thr Val Thr Leu Ser Gly Phe Ser Ala Leu Ser Phe
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 Leu Lys Ser Pro Ala Ser Thr Val Thr Asn Gly Leu Gly Ala Ile Asn
 135 140 145

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Val Lys Gly Asn Leu Ser Leu Leu Asp Asn Asp Lys Val Leu Ile Gln
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| | Lys Gly Gly Ala Ile Ala Ile Ala Asp Ser Gly Thr Leu Ser Ile Ser | |
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| 10 | gga gac agt ggc gac att atc ttt gaa ggc aat acg ata gga gct aca | 783 |
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| 50 | aac ggg aaa aag ata aaa ctc agt gct gcc aca gct cag aaa gat att | 1263 |
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| | 490 495 500 | |
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| | ggg gat acc ttg tct ctg ggt ttt gct cag ctc ttt gcg cgt gac aaa | 1791 |
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| | Asp Tyr Phe Met Asn Thr Asn Phe Ala Lys Thr Tyr Ala Gly Ser Leu | |
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| | cgt ttg cag cac gat gct tcc cta tac tct gtg gtg agt atc ctt tta | 1887 |
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| | 615 620 625 | |
| | gga gag gga gga ctc cgc gag atc ctg ttg cct tat gtt tcc aag act | 1935 |
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| | 680 685 690 | |

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10 cga gtt gct gtt gaa aat acc agc ggc aga gga ttt ttc caa gag tac 2127
 Arg Val Ala Val Glu Asn Thr Ser Gly Arg Gly Phe Phe Gln Glu Tyr
 695 700 705
 act cca ttt gta aaa gtc caa gct gtt tac gct cgc caa gat agc ttt 2175
 Thr Pro Phe Val Lys Val Gln Ala Val Tyr Ala Arg Gln Asp Ser Phe
 710 715 720 725
 gta gaa cta gga gct atc agt cgt gat ttt agt gat tcg cat ctt tat 2223
 Val Glu Leu Gly Ala Ile Ser Arg Asp Phe Ser Asp Ser His Leu Tyr
 730 735 740
 aac ctt gcg att cct ctt gga atc aag tta gag aaa cgg ttt gca gag 2271
 Asn Leu Ala Ile Pro Leu Gly Ile Lys Leu Glu Lys Arg Phe Ala Glu
 745 750 755
 20 caa tat tat cat gtt gta gcg atg tat tct cca gat gtt tgt cgt agt 2319
 Gln Tyr Tyr His Val Val Ala Met Tyr Ser Pro Asp Val Cys Arg Ser
 760 765 770
 aac ccc aaa tgt acg act acc cta ctt tcc aac caa ggg agt tgg aag 2367
 Asn Pro Lys Cys Thr Thr Thr Leu Leu Ser Asn Gln Gly Ser Trp Lys
 775 780 785
 30 acc aaa ggt tcg aac tta gca aga cag gct ggt att gtt cag gcc tca 2415
 Thr Lys Gly Ser Asn Leu Ala Arg Gln Ala Gly Ile Val Gln Ala Ser
 790 795 800 805
 ggt ttt cga tct ttg gga gct gca gca gag ctt ttc ggg aac ttt ggc 2463
 Gly Phe Arg Ser Leu Gly Ala Ala Ala Glu Leu Phe Gly Asn Phe Gly
 810 815 820
 ttt gaa tgg cgg gga tct tct cgt agc tat aat gta gat gcg ggt agc 2511
 Phe Glu Trp Arg Gly Ser Ser Arg Ser Tyr Asn Val Asp Ala Gly Ser
 825 830 835
 40 aaa atc aaa ttt 2523
 Lys Ile Lys Phe
 840
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 <211> 1000
 <212> DNA
 <213> Chlamydia pneumoniae
 <220>
 50 <221> CDS
 <222> (101)..(835)
 <400> 3
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 agtacaacag cctgttgctg catcgctcagt gccttcctac atg ccc cca ctg aat 115
 Met Pro Pro Leu Asn
 1 5

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| | | | | | | | | | | | | | | | | | | |
|----|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | gct | gat | gat | gtt | ctc | cct | aga | gac | cat | ctg | tca | gat | gga | agt | ttc | tca | 163 |
| | | Ala | Asp | Asp | Val | Leu | Pro | Arg | Asp | His | Leu | Ser | Asp | Gly | Ser | Phe | Ser | |
| | | | | | | 10 | | | | | 15 | | | | | 20 | | |
| | | gat | acg | tat | cca | gac | att | aca | acg | caa | gcg | atc | atc | tta | att | ttc | ttg | 211 |
| | | Asp | Thr | Tyr | Pro | Asp | Ile | Thr | Thr | Gln | Ala | Ile | Ile | Leu | Ile | Phe | Leu | |
| | | | | | 25 | | | | | 30 | | | | | 35 | | | |
| 10 | | gcc | cta | tcg | cct | ttc | ctg | gtc | atg | ttg | ctc | act | tcg | tat | cta | aag | att | 259 |
| | | Ala | Leu | Ser | Pro | Phe | Leu | Val | Met | Leu | Leu | Thr | Ser | Tyr | Leu | Lys | Ile | |
| | | | | 40 | | | | | 45 | | | | | 50 | | | | |
| | | atc | att | act | tta | gtc | tta | tta | cgt | aac | gcc | tta | gga | gta | caa | caa | aca | 307 |
| | | Ile | Ile | Thr | Leu | Val | Leu | Leu | Arg | Asn | Ala | Leu | Gly | Val | Gln | Gln | Thr | |
| | | | 55 | | | | 60 | | | | | | 65 | | | | | |
| 20 | | cct | ccc | agt | caa | gtc | ctc | aat | ggg | att | gca | ctc | atc | cta | tct | att | tat | 355 |
| | | Pro | Pro | Ser | Gln | Val | Leu | Asn | Gly | Ile | Ala | Leu | Ile | Leu | Ser | Ile | Tyr | |
| | | 70 | | | | | 75 | | | | | 80 | | | | 85 | | |
| | | gtg | atg | ttc | ccc | acg | gga | gtg | gct | atg | tat | aaa | gat | gct | cgc | aag | gaa | 403 |
| | | Val | Met | Phe | Pro | Thr | Gly | Val | Ala | Met | Tyr | Lys | Asp | Ala | Arg | Lys | Glu | |
| | | | | | | 90 | | | | | 95 | | | | | 100 | | |
| | | atc | gaa | gcc | aat | acc | att | cct | caa | agc | ctc | ttc | act | gca | gaa | ggg | gct | 451 |
| | | Ile | Glu | Ala | Asn | Thr | Ile | Pro | Gln | Ser | Leu | Phe | Thr | Ala | Glu | Gly | Ala | |
| | | | | | 105 | | | | | 110 | | | | | 115 | | | |
| 30 | | gaa | aca | gtg | ttt | gtc | gct | tta | aac | aaa | tct | aaa | gaa | cct | ttg | cgc | tct | 499 |
| | | Glu | Thr | Val | Phe | Val | Ala | Leu | Asn | Lys | Ser | Lys | Glu | Pro | Leu | Arg | Ser | |
| | | | | 120 | | | | | 125 | | | | | 130 | | | | |
| | | ttc | tta | att | cgc | aac | act | cca | aaa | gca | caa | att | caa | agc | ttt | tac | aag | 547 |
| | | Phe | Leu | Ile | Arg | Asn | Thr | Pro | Lys | Ala | Gln | Ile | Gln | Ser | Phe | Tyr | Lys | |
| | | | 135 | | | | 140 | | | | | | 145 | | | | | |
| 40 | | atc | tca | cag | aaa | acc | ttc | cct | tcg | gaa | att | cga | gcg | cac | ctc | act | gcc | 595 |
| | | Ile | Ser | Gln | Lys | Thr | Phe | Pro | Ser | Glu | Ile | Arg | Ala | His | Leu | Thr | Ala | |
| | | 150 | | | | | 155 | | | | | 160 | | | | | 165 | |
| | | tcc | gac | ttt | gta | atc | att | att | cct | gct | ttt | att | atg | ggg | cag | ata | aaa | 643 |
| | | Ser | Asp | Phe | Val | Ile | Ile | Ile | Pro | Ala | Phe | Ile | Met | Gly | Gln | Ile | Lys | |
| | | | | | | 170 | | | | | 175 | | | | | 180 | | |
| | | aat | gct | ttc | gaa | att | gga | gtc | ttg | atc | tat | cta | cct | ttc | ttt | gtt | att | 691 |
| | | Asn | Ala | Phe | Glu | Ile | Gly | Val | Leu | Ile | Tyr | Leu | Pro | Phe | Phe | Val | Ile | |
| | | | | | 185 | | | | | 190 | | | | | 195 | | | |
| 50 | | gat | tta | gtg | act | gct | aac | gtt | ctt | gta | gcg | atg | cag | atg | atg | atg | tta | 739 |
| | | Asp | Leu | Val | Thr | Ala | Asn | Val | Leu | Val | Ala | Met | Gln | Met | Met | Met | Leu | |
| | | | | 200 | | | | | 205 | | | | | 210 | | | | |
| | | tcc | cct | cta | tcg | att | tcg | tta | cct | tta | aag | tta | ctt | ttg | atc | gtc | atg | 787 |
| | | Ser | Pro | Leu | Ser | Ile | Ser | Leu | Pro | Leu | Lys | Leu | Leu | Leu | Ile | Val | Met | |
| | | | 215 | | | | | 220 | | | | | 225 | | | | | |
| 60 | | gta | gac | gga | tgg | aca | tta | ctg | ctc | caa | ggg | ctt | atg | atc | agc | ttt | aaa | 835 |
| | | Val | Asp | Gly | Trp | Thr | Leu | Leu | Leu | Gln | Gly | Leu | Met | Ile | Ser | Phe | Lys | |
| | | 230 | | | | | 235 | | | | | 240 | | | | | 245 | |

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taaggacacg tgccgtgtta gcatttttcg caactagttt caaatctggt ctttttgagt 895
 actcctacca atcattatta cttattttga ttgtttcggc acctcccatc atcttagctt 955
 ccatagtcgg gattatgggt gcgatcttcc aagccgcaac acaaa 1000

<210> 4
 <211> 9
 10 <212> PRT
 <213> Chlamydia pneumoniae

<220>
 <221> SITE
 <222> (188)..(197)

<400> 4
 Val Leu Ile Tyr Leu Pro Phe Phe Val
 1 5

<210> 5
 <211> 900
 <212> DNA
 <213> Chlamydia pneumoniae

<220>
 <221> CDS
 <222> (101)..(799)

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tgaggtaa at cagcctcaaa gatactacgc catagtaaag atg aag ttt ttt agc 115
 Met Lys Phe Phe Ser
 1 5

tta att ttt aaa gat gat gat gtc tcc cca aat aag aag gtt tta tct 163
 Leu Ile Phe Lys Asp Asp Asp Val Ser Pro Asn Lys Lys Val Leu Ser
 10 15 20

cct gaa gct ttc tct gct ttc ctt gat gcc aaa gag ctg tta gaa aaa 211
 Pro Glu Ala Phe Ser Ala Phe Leu Asp Ala Lys Glu Leu Leu Glu Lys
 25 30 35

aca aaa gcc gat agc gaa gcc tat gtt gca gag aca gaa caa aag tgt 259
 Thr Lys Ala Asp Ser Glu Ala Tyr Val Ala Glu Thr Glu Gln Lys Cys
 40 45 50

gca caa att cgt caa gaa gct aaa gat caa gga ttt aaa gag gga tct 307
 Ala Gln Ile Arg Gln Glu Ala Lys Asp Gln Gly Phe Lys Glu Gly Ser
 55 60 65

gaa tcc tgg agc aag caa att gct ttc tta gaa gaa gaa act aaa aat 355
 Glu Ser Trp Ser Lys Gln Ile Ala Phe Leu Glu Glu Glu Thr Lys Asn
 70 75 80 85

cta cgc ata aga gta cgc gag gcc ttg gtt cct ctg gca att gcg agt 403
 Leu Arg Ile Arg Val Arg Glu Ala Leu Val Pro Leu Ala Ile Ala Ser
 90 95 100

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gtg agg aaa atc att ggg aag gaa ctc gaa tta cat cct gaa act att 451
 Val Arg Lys Ile Ile Gly Lys Glu Leu Glu Leu His Pro Glu Thr Ile
 105 110 115

gtc tct att att tct caa gca ttg aaa gag ctc aca caa aat aaa cat 499
 Val Ser Ile Ile Ser Gln Ala Leu Lys Glu Leu Thr Gln Asn Lys His
 120 125 130

10

atc att atc tct gtc aat ccc aaa gat tta cct ctt gtt gag aaa agt 547
 Ile Ile Ile Ser Val Asn Pro Lys Asp Leu Pro Leu Val Glu Lys Ser
 135 140 145

cgt cct gaa ctc aag aac atc gtg gag tat gct gac tcc tta att ctt 595
 Arg Pro Glu Leu Lys Asn Ile Val Glu Tyr Ala Asp Ser Leu Ile Leu
 150 155 160 165

20

aca gca aaa cct gat gtt act cct ggg ggt tgc att atc gag act gaa 643
 Thr Ala Lys Pro Asp Val Thr Pro Gly Gly Cys Ile Ile Glu Thr Glu
 170 175 180

gca ggg atc atc aat gcg cag ctt gat gta caa tta gat gcc tta gaa 691
 Ala Gly Ile Ile Asn Ala Gln Leu Asp Val Gln Leu Asp Ala Leu Glu
 185 190 195

aaa gct ttc tcg act ata cta aaa gcg aag aac cct gta gac gag cca 739
 Lys Ala Phe Ser Thr Ile Leu Lys Ala Lys Asn Pro Val Asp Glu Pro
 200 205 210

30

tct gag act tca tca tcc acg gat tct tct tct tta tct aat gat cag 787
 Ser Glu Thr Ser Ser Ser Thr Asp Ser Ser Ser Leu Ser Asn Asp Gln
 215 220 225

gat aag aaa gaa taaaggatt cactattatg cgatccattt ttcgattttc 839
 Asp Lys Lys Glu
 230

40

cctttgtttt tttacgctga gcgtctcatg ctgatttgct gacgccagtc tatatgaaaa 899
 c 900

<210> 6
 <211> 9
 <212> PRT
 <213> Chlamydia pneumoniae

<220>
 <221> SITE
 50 <222> (163)..(171)

<400> 6
 Leu Ile Leu Thr Ala Lys Pro Asp Val
 1 5

<210> 7
 <211> 1200
 <212> DNA
 60 <213> Chlamydia pneumoniae

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<220>

<221> CDS

<222> (101)..(1066)

<400> 7

tggtcgcgat tggcactaat cccccctttt gttatggtga ataaaaaggt atgcgtggat 60

| | | | | | | | | | | | | | | | | | |
|----|------------|----------|------------|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 10 | tatggttcgt | cgatctat | ctttttgctt | gttctttcta | atg | aca | ttg | ctg | tgc | 115 | | | | | | | |
| | | | | | Met | Thr | Leu | Leu | Cys | | | | | | | | |
| | | | | | 1 | | | | 5 | | | | | | | | |
| | tgt | aca | agc | tgt | aac | agc | agg | tct | cta | att | gtg | cac | ggg | ctt | cct | ggc | 163 |
| | Cys | Thr | Ser | Cys | Asn | Ser | Arg | Ser | Leu | Ile | Val | His | Gly | Leu | Pro | Gly | |
| | | | | | 10 | | | | | 15 | | | | 20 | | | |
| | aga | gaa | gcg | aat | gag | att | gtg | gtg | ctt | ttg | gta | agc | aaa | ggg | gtg | gct | 211 |
| 20 | Arg | Glu | Ala | Asn | Glu | Ile | Val | Val | Leu | Leu | Val | Ser | Lys | Gly | Val | Ala | |
| | | | | 25 | | | | | 30 | | | | | 35 | | | |
| | gca | caa | aaa | ttg | cct | caa | gct | gca | gcg | gct | aca | gcc | gga | gca | gct | act | 259 |
| | Ala | Gln | Lys | Leu | Pro | Gln | Ala | Ala | Ala | Ala | Thr | Ala | Gly | Ala | Ala | Thr | |
| | | | 40 | | | | 45 | | | | | 50 | | | | | |
| | gag | caa | atg | tgg | gat | atc | gcg | gtt | ccg | tca | gca | caa | atc | aca | gag | gcc | 307 |
| | Glu | Gln | Met | Trp | Asp | Ile | Ala | Val | Pro | Ser | Ala | Gln | Ile | Thr | Glu | Ala | |
| | | 55 | | | | | 60 | | | | | 65 | | | | | |
| 30 | ctt | gcc | att | cta | aat | caa | gcg | ggg | ctt | cca | cgt | atg | aaa | ggg | aca | agc | 355 |
| | Leu | Ala | Ile | Leu | Asn | Gln | Ala | Gly | Leu | Pro | Arg | Met | Lys | Gly | Thr | Ser | |
| | 70 | | | | | 75 | | | | 80 | | | | | | 85 | |
| | ctg | tta | gat | ctt | ttt | gca | aaa | caa | ggg | ctt | gtt | cct | tcc | gag | ctt | cag | 403 |
| | Leu | Leu | Asp | Leu | Phe | Ala | Lys | Gln | Gly | Leu | Val | Pro | Ser | Glu | Leu | Gln | |
| | | | | | 90 | | | | | 95 | | | | | 100 | | |
| | gaa | aaa | atc | cgt | tat | caa | gaa | ggc | tta | tca | gaa | cag | atg | gcc | tct | acg | 451 |
| 40 | Glu | Lys | Ile | Arg | Tyr | Gln | Glu | Gly | Leu | Ser | Glu | Gln | Met | Ala | Ser | Thr | |
| | | | | 105 | | | | 110 | | | | | | 115 | | | |
| | att | aga | aaa | atg | gat | ggc | gtt | gtc | gat | gcc | tca | gta | cag | att | tcc | ttc | 499 |
| | Ile | Arg | Lys | Met | Asp | Gly | Val | Val | Asp | Ala | Ser | Val | Gln | Ile | Ser | Phe | |
| | | | 120 | | | | | 125 | | | | | 130 | | | | |
| | act | aca | gaa | aat | gaa | gat | aat | ctt | cct | tta | aca | gcc | tct | gtg | tat | att | 547 |
| | Thr | Thr | Glu | Asn | Glu | Asp | Asn | Leu | Pro | Leu | Thr | Ala | Ser | Val | Tyr | Ile | |
| | | | 135 | | | | 140 | | | | | 145 | | | | | |
| 50 | aag | cat | cga | ggg | gtt | ttg | gac | aat | ccg | aac | agc | att | atg | gtt | tcc | aaa | 595 |
| | Lys | His | Arg | Gly | Val | Leu | Asp | Asn | Pro | Asn | Ser | Ile | Met | Val | Ser | Lys | |
| | | | | | | 155 | | | | | 160 | | | | | 165 | |
| | att | aag | cgc | ctt | att | gca | agt | gct | gtt | cca | gga | ctt | gtg | cca | gag | aac | 643 |
| | Ile | Lys | Arg | Leu | Ile | Ala | Ser | Ala | Val | Pro | Gly | Leu | Val | Pro | Glu | Asn | |
| | | | | | 170 | | | | 175 | | | | | | 180 | | |
| | gtc | tct | gta | gtg | agc | gat | cgc | gca | gct | tat | agt | gat | att | aca | att | aat | 691 |
| 60 | Val | Ser | Val | Val | Ser | Asp | Arg | Ala | Ala | Tyr | Ser | Asp | Ile | Thr | Ile | Asn | |
| | | | | 185 | | | | | 190 | | | | | 195 | | | |

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ggt cct tgg gga tta aca gaa gaa atc gat tat gtt tct gtt tgg ggt 739
 Gly Pro Trp Gly Leu Thr Glu Glu Ile Asp Tyr Val Ser Val Trp Gly
 200 205 210

att att ctt gcg aag tct tcg ctc acc aaa ttc cgt ctc att ttt tat 787
 Ile Ile Leu Ala Lys Ser Ser Leu Thr Lys Phe Arg Leu Ile Phe Tyr
 215 220 225

10

gtc ttg att ctc att tta ttt gtt att tct tgt ggt ctc ctt tgg gtc 835
 Val Leu Ile Leu Ile Leu Phe Val Ile Ser Cys Gly Leu Leu Trp Val
 230 235 240 245

att tgg aaa act cat act ctc att atg act atg gga ggt aca aaa ggg 883
 Ile Trp Lys Thr His Thr Leu Ile Met Thr Met Gly Gly Thr Lys Gly
 250 255 260

20

ttc ttc aac cct aca cca tat aca aag aat gcc ttg gaa gcc aag aaa 931
 Phe Phe Asn Pro Thr Pro Tyr Thr Lys Asn Ala Leu Glu Ala Lys Lys
 265 270 275

gcc gag gga gca gct gct gac aaa gag aaa aaa gaa gat gca gat tca 979
 Ala Glu Gly Ala Ala Ala Asp Lys Glu Lys Lys Glu Asp Ala Asp Ser
 280 285 290

cag ggg gaa agc aaa aat gcg gaa acc agt gat aaa gac tct agt gat 1027
 Gln Gly Glu Ser Lys Asn Ala Glu Thr Ser Asp Lys Asp Ser Ser Asp
 295 300 305

30

aaa gat gct cca gaa gga agc aat gaa att gag ggt gct tagtgactgc 1076
 Lys Asp Ala Pro Glu Gly Ser Asn Glu Ile Glu Gly Ala
 310 315 320

caacactttt ggaactctag acatcttgat gaagcactcc aaggaagatg acctctccag 1136
 gtttcttctt aaaaatcttc ttgttgaatc tcctcatccc gaagaaatcc ctttaaaatc 1196
 tttta 1200

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<210> 8
 <211> 9
 <212> PRT
 <213> Chlamydia pneumoniae
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 <221> SITE
 <222> (201)..(209)

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 Gly Leu Thr Glu Glu Ile Asp Tyr Val
 1 5

<210> 9
 <211> 850
 <212> DNA
 <213> Chlamydia pneumoniae
 <220>
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 <222> (101)..(778)

60

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<400> 9

ttgaacccta tggaaatgta tcttatttgt gctgggctat atttcttaat gacaacatca 60

ttttcctgta tttctagggtt atcagaaaag agaaggagtt atg aca att aga gtc 115
 Met Thr Ile Arg Val
 1 5

10 cga aac ctt gcc tac tct gta aat aag aaa aag att cta gat ggt gta 163
 Arg Asn Leu Ala Tyr Ser Val Asn Lys Lys Lys Ile Leu Asp Gly Val
 10 15 20

act ttt tct tta gag cga ggg cac att aca ctg ttt gtt ggg aag agt 211
 Thr Phe Ser Leu Glu Arg Gly His Ile Thr Leu Phe Val Gly Lys Ser
 25 30 35

20 ggt tca gga aaa aca atg att tta cgt gct ttg gcg ggc tta gtc cag 259
 Gly Ser Gly Lys Thr Met Ile Leu Arg Ala Leu Ala Gly Leu Val Gln
 40 45 50

ccc act caa gga gat att tgg att gaa ggg gag gct cca gct cta gtt 307
 Pro Thr Gln Gly Asp Ile Trp Ile Glu Gly Glu Ala Pro Ala Leu Val
 55 60 65

ttc caa caa ccc gag tta ttt tcc cat atg aca gta tta gga aat tgc 355
 Phe Gln Gln Pro Glu Leu Phe Ser His Met Thr Val Leu Gly Asn Cys
 70 75 80 85

30 acc cat cca caa atc cat atc aag ggt cgt agt acc gaa gaa gct cga 403
 Thr His Pro Gln Ile His Ile Lys Gly Arg Ser Thr Glu Glu Ala Arg
 90 95 100

gaa aag gcg ttc gag ctt tta cat ttg ttg gat att gaa gag gtt gct 451
 Glu Lys Ala Phe Glu Leu Leu His Leu Leu Asp Ile Glu Glu Val Ala
 105 110 115

40 aag aat tat cct gac cag ctc tct ggg gga caa aaa caa cgt gtg gct 499
 Lys Asn Tyr Pro Asp Gln Leu Ser Gly Gly Gln Lys Gln Arg Val Ala
 120 125 130

att gta cgt tct tta tgt atg gat aaa cat aca tta ctt ttt gat gaa 547
 Ile Val Arg Ser Leu Cys Met Asp Lys His Thr Leu Leu Phe Asp Glu
 135 140 145

cct aca tcg gct tta gat cct ttt gct acg gca tcg ttc cga cat ctt 595
 Pro Thr Ser Ala Leu Asp Pro Phe Ala Thr Ala Ser Phe Arg His Leu
 150 155 160 165

50 tta gaa aca ctt cga gac cag gaa ctg act gta ggg tta act act cat 643
 Leu Glu Thr Leu Arg Asp Gln Glu Leu Thr Val Gly Leu Thr Thr His
 170 175 180

gac atg caa ttt gtt cat agt tgt ttg gat cgt atc tat ctt ata gat 691
 Asp Met Gln Phe Val His Ser Cys Leu Asp Arg Ile Tyr Leu Ile Asp
 185 190 195

60 caa gga act gtt gcg ggg gtc tat gac aag cgt gac gga gag ctc gat 739
 Gln Gly Thr Val Ala Gly Val Tyr Asp Lys Arg Asp Gly Glu Leu Asp
 200 205 210

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tct ggt cat cca tta tcg aaa tat atc cac tct gct caa taggactaca 788
 Ser Gly His Pro Leu Ser Lys Tyr Ile His Ser Ala Gln
 215 220 225

gctgctagag cagctgtagt gatacttttag aatcctgacc agtggcagga atgagcggca 848
 tg 850

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 <213> Chlamydia pneumoniae

<220>
 <221> SITE
 <222> (145)..(153)

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 1 5

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ttcctaataa cgtaagtaat aaacaatcaa aagtcgcgat atg aaa aga cct ttt 115
 Met Lys Arg Pro Phe
 1 5

40

ttt acc tat cta tgc atc atc ttc tac gga tct tgt gca tcg tta tct 163
 Phe Thr Tyr Leu Cys Ile Ile Phe Tyr Gly Ser Cys Ala Ser Leu Ser
 10 15 20

tta cat gca gga ctc tct ttc cca gaa gta cgt gga gct acg gct gct 211
 Leu His Ala Gly Leu Ser Phe Pro Glu Val Arg Gly Ala Thr Ala Ala
 25 30 35

50

gtt gtc cat gcc gac tct ggg aag gta ttc tat gat aaa gac ata gat 259
 Val Val His Ala Asp Ser Gly Lys Val Phe Tyr Asp Lys Asp Ile Asp
 40 45 50

gct gta atc tat cct gcc agc atg acg aaa atc gca act gcc ctc ttt 307
 Ala Val Ile Tyr Pro Ala Ser Met Thr Lys Ile Ala Thr Ala Leu Phe
 55 60 65

atc cta aag cac tat ccc aca gtc ctc gat act ctc atc aaa gtc aaa 355
 Ile Leu Lys His Tyr Pro Thr Val Leu Asp Thr Leu Ile Lys Val Lys
 70 75 80 85

60

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| | caa | gat | gcg | atc | gct | tcc | atc | act | ccg | caa | gca | aaa | aaa | caa | tca | gga | 403 |
| | Gln | Asp | Ala | Ile | Ala | Ser | Ile | Thr | Pro | Gln | Ala | Lys | Lys | Gln | Ser | Gly | |
| | | | | | 90 | | | | | 95 | | | | | 100 | | |
| | tat | cgt | agt | cct | ccc | cac | tgg | tta | gaa | act | gat | gga | tct | aca | ata | cag | 451 |
| | Tyr | Arg | Ser | Pro | Pro | His | Trp | Leu | Glu | Thr | Asp | Gly | Ser | Thr | Ile | Gln | |
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| | Leu | Val | Cys | Ser | Ala | Asn | Asp | Ala | Ala | Asn | Val | Leu | Ala | Met | Ala | Cys | |
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| | Cys | Gly | Ser | Val | Glu | Lys | Phe | Met | Asp | Lys | Leu | Asn | Phe | Phe | Leu | Lys | |
| | 150 | | | | | 155 | | | | | 160 | | | | | 165 | |
| | gaa | gaa | atc | ggc | tgc | act | cat | acc | cat | ttt | aat | aat | ccc | cat | ggg | tta | 643 |
| | Glu | Glu | Ile | Gly | Cys | Thr | His | Thr | His | Phe | Asn | Asn | Pro | His | Gly | Leu | |
| | | | | | 170 | | | | | 175 | | | | | 180 | | |
| | cat | cat | ccg | aat | cac | tat | act | aca | acc | cgt | gat | ctt | att | agc | atc | atg | 691 |
| | His | His | Pro | Asn | His | Tyr | Thr | Thr | Thr | Arg | Asp | Leu | Ile | Ser | Ile | Met | |
| | | | | 185 | | | | | 190 | | | | | 195 | | | |
| 30 | cgt | tgc | gct | ctg | aaa | gaa | cct | cca | ttt | cga | ggg | gtc | atc | tcc | acg | aca | 739 |
| | Arg | Cys | Ala | Leu | Lys | Glu | Pro | Pro | Phe | Arg | Gly | Val | Ile | Ser | Thr | Thr | |
| | | | 200 | | | | | 205 | | | | | 210 | | | | |
| | agc | tat | aaa | ata | ggg | gct | aca | aac | ctg | cat | ggc | gaa | cgg | atc | cta | tcc | 787 |
| | Ser | Tyr | Lys | Ile | Gly | Ala | Thr | Asn | Leu | His | Gly | Glu | Arg | Ile | Leu | Ser | |
| | | 215 | | | | | 220 | | | | | 225 | | | | | |
| 40 | cca | aca | aac | aaa | ttg | ctt | ctt | cct | ggg | tct | acc | tac | cac | tat | ccc | cca | 835 |
| | Pro | Thr | Asn | Lys | Leu | Leu | Leu | Pro | Gly | Ser | Thr | Tyr | His | Tyr | Pro | Pro | |
| | 230 | | | | | 235 | | | | | 240 | | | | | 245 | |
| | gct | tta | gga | ggg | aaa | aca | ggg | acc | acc | aag | act | gca | ggg | aaa | aat | cta | 883 |
| | Ala | Leu | Gly | Gly | Lys | Thr | Gly | Thr | Thr | Lys | Thr | Ala | Gly | Lys | Asn | Leu | |
| | | | | | 250 | | | | | 255 | | | | | 260 | | |
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| | Ile | Met | Ala | Ala | Glu | Lys | Asn | Asn | Arg | Leu | Leu | Val | Thr | Ile | Ala | Thr | |
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| | Gly | Tyr | Ser | Gly | Pro | Val | Ser | Asp | Leu | Tyr | Gln | Asp | Val | Ile | Ala | Leu | |
| | | | 280 | | | | | 285 | | | | | 290 | | | | |
| | tgt | gaa | acg | gta | ttt | aac | gag | ccg | cta | tta | aga | aaa | gag | ctc | gtc | ccc | 1027 |
| | Cys | Glu | Thr | Val | Phe | Asn | Glu | Pro | Leu | Leu | Arg | Lys | Glu | Leu | Val | Pro | |
| | | 295 | | | | | 300 | | | | | 305 | | | | | |
| 60 | ccc | tcc | gac | tgt | ctc | caa | tta | gaa | ata | gcg | aat | ctt | ggg | aag | ctt | tct | 1075 |
| | Pro | Ser | Asp | Cys | Leu | Gln | Leu | Glu | Ile | Ala | Asn | Leu | Gly | Lys | Leu | Ser | |
| | 310 | | | | | 315 | | | | | 320 | | | | | 325 | |

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 Cys Pro Leu Pro Glu Gly Leu Tyr Tyr Asp Phe Tyr Ala Ser Glu Asp
 330 335 340

cgc gaa cct ctt tct gta tct ttt att gca cat gcg gac gcc ttc cct 1171
 Arg Glu Pro Leu Ser Val Ser Phe Ile Ala His Ala Asp Ala Phe Pro
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10 att gaa caa gga gat ctt ctt ggt cat tgg gtt ttt tat gac gat gaa 1219
 Ile Glu Gln Gly Asp Leu Leu Gly His Trp Val Phe Tyr Asp Asp Glu
 360 365 370

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 Gly Lys Lys Ile Ser Ser Gln Pro Phe Tyr Ala Pro Cys Arg Phe Glu
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 Arg Thr Ile Lys Pro Trp Lys Leu Tyr Met Lys Arg Val Phe Thr Ser
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 Tyr Arg Thr Tyr Met Ser Ile Thr Met Leu Leu Met Tyr Phe Arg Ile
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 Arg Lys His Arg Lys Tyr Lys Asn Leu Lys His Tyr Ser Lys Ile
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| | Met Ala Ser Asn Pro | |
| | 1 5 | |
| | att tta cag ata gag gat cta tcc ata acc ttg gca aaa caa cgc caa | 163 |
| | Ile Leu Gln Ile Glu Asp Leu Ser Ile Thr Leu Ala Lys Gln Arg Gln | |
| | 10 10 15 20 | |
| | cag tac ccc atc gtc caa tct tta tcg ttt act atc aat gaa gga caa | 211 |
| | Gln Tyr Pro Ile Val Gln Ser Leu Ser Phe Thr Ile Asn Glu Gly Gln | |
| | 25 30 35 | |
| | acc tta gca atc att gga gaa tca gga tca gga aaa tct gtc tct gcg | 259 |
| | Thr Leu Ala Ile Ile Gly Glu Ser Gly Ser Gly Lys Ser Val Ser Ala | |
| | 40 45 50 | |
| | cat gca atc ctt cga tta ctt cct tgc ccc cca ttt tct gtt tct ggc | 307 |
| | His Ala Ile Leu Arg Leu Leu Pro Cys Pro Pro Phe Ser Val Ser Gly | |
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| | cag gtc aac ttc caa ggc cac aac tta ctt acg gct tcg cgc tct ata | 355 |
| | Gln Val Asn Phe Gln Gly His Asn Leu Leu Thr Ala Ser Arg Ser Ile | |
| | 70 75 80 85 | |
| | caa aaa aag att ata ggg aca gaa att tct atg atc ttt caa aac ccg | 403 |
| | Gln Lys Lys Ile Ile Gly Thr Glu Ile Ser Met Ile Phe Gln Asn Pro | |
| | 90 95 100 | |
| | caa gca tct cta aac ccc gtg ttt act att gaa cag cag ttt cga gaa | 451 |
| | Gln Ala Ser Leu Asn Pro Val Phe Thr Ile Glu Gln Gln Phe Arg Glu | |
| | 105 110 115 | |
| | att att cat acc cac cta gcc tta act gca gaa gtt gct aaa gaa aag | 499 |
| | Ile Ile His Thr His Leu Ala Leu Thr Ala Glu Val Ala Lys Glu Lys | |
| | 120 125 130 | |
| | atg tta tac gct ctt gaa gaa aca ggg ttt cat gat ccc agg ctg tgc | 547 |
| | Met Leu Tyr Ala Leu Glu Glu Thr Gly Phe His Asp Pro Arg Leu Cys | |
| | 135 140 145 | |
| | ttg aat ctc tac ccc cac caa ctc tct gga ggg atg ctt caa aga att | 595 |
| | Leu Asn Leu Tyr Pro His Gln Leu Ser Gly Gly Met Leu Gln Arg Ile | |
| | 150 155 160 165 | |
| | tgc att gcc atg gcg ctc ctc tgt tct cct aaa ctt ctt att gct gat | 643 |
| | Cys Ile Ala Met Ala Leu Leu Cys Ser Pro Lys Leu Leu Ile Ala Asp | |
| | 170 175 180 | |
| | gaa cct acg act gct tta gat gtt tct gtt cag tat cag att cta caa | 691 |
| | Glu Pro Thr Thr Ala Leu Asp Val Ser Val Gln Tyr Gln Ile Leu Gln | |
| | 185 190 195 | |
| | tta cta aaa aca cta cag aaa aaa acg gga atg agc ctt ctt att att | 739 |
| | Leu Leu Lys Thr Leu Gln Lys Lys Thr Gly Met Ser Leu Leu Ile Ile | |
| | 200 205 210 | |
| | acc cat aat atg gga gtc gtt gca gaa act gct gat gac gtg ctc gtg | 787 |
| | Thr His Asn Met Gly Val Val Ala Glu Thr Ala Asp Asp Val Leu Val | |
| | 215 220 225 | |

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| | ctc | tat | gca | gga | cgc | atg | gta | gaa | tgt | gcc | cct | gcg | gtt | caa | atg | ttc | 835 |
| | Leu | Tyr | Ala | Gly | Arg | Met | Val | Glu | Cys | Ala | Pro | Ala | Val | Gln | Met | Phe | |
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| | cat | aat | cct | tct | cat | ccc | tat | acc | cga | gat | ctt | tta | gca | tcc | aga | ccc | 883 |
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| 10 | tct | cta | caa | ccg | caa | caa | cta | ggg | tcc | ttc | aac | ccc | att | cca | gga | cag | 931 |
| | Ser | Leu | Gln | Pro | Gln | Gln | Leu | Gly | Ser | Phe | Asn | Pro | Ile | Pro | Gly | Gln | |
| | | | | 265 | | | | | 270 | | | | | 275 | | | |
| | ccc | cca | cac | tac | acg | gcc | ttt | ccc | tcg | gga | tgt | cgc | tat | cac | cct | aga | 979 |
| | Pro | Pro | His | Tyr | Thr | Ala | Phe | Pro | Ser | Gly | Cys | Arg | Tyr | His | Pro | Arg | |
| | | | 280 | | | | | 285 | | | | | 290 | | | | |
| 20 | tgc | tca | aaa | att | tta | aat | cga | tgt | tct | gcg | gaa | gct | cca | gaa | atc | tat | 1027 |
| | Cys | Ser | Lys | Ile | Leu | Asn | Arg | Cys | Ser | Ala | Glu | Ala | Pro | Glu | Ile | Tyr | |
| | | 295 | | | | | 300 | | | | | 305 | | | | | |
| | ccg | gta | cgc | gaa | ggg | cac | aaa | gta | agg | gtt | ggc | tgt | atg | acg | act | aat | 1075 |
| | Pro | Val | Arg | Glu | Gly | His | Lys | Val | Arg | Val | Gly | Cys | Met | Thr | Thr | Asn | |
| | 310 | | | | | 315 | | | | | 320 | | | | | 325 | |
| | ttt | ccc | caa | cct | tta | att | caa | gca | acc | tca | tta | aca | aag | cac | tat | tac | 1123 |
| | Phe | Pro | Gln | Pro | Leu | Ile | Gln | Ala | Thr | Ser | Leu | Thr | Lys | His | Tyr | Tyr | |
| | | | | | 330 | | | | | 335 | | | | | 340 | | |
| 30 | aag | cgt | tcc | ttt | tgg | ttt | cag | gga | aag | aca | att | gcc | agt | cgt | cct | gtt | 1171 |
| | Lys | Arg | Ser | Phe | Trp | Phe | Gln | Gly | Lys | Thr | Ile | Ala | Ser | Arg | Pro | Val | |
| | | | | 345 | | | | | 350 | | | | | 355 | | | |
| | gac | gac | gtc | tct | ttt | tca | cta | tac | tcc | aga | cgt | gct | gtc | gga | ctt | att | 1219 |
| | Asp | Asp | Val | Ser | Phe | Ser | Leu | Tyr | Ser | Arg | Arg | Ala | Val | Gly | Leu | Ile | |
| | | | 360 | | | | | 365 | | | | | 370 | | | | |
| 40 | gga | gaa | tct | gga | tca | ggg | aaa | agt | acc | ctg | gcg | tta | gct | ctc | gca | ggg | 1267 |
| | Gly | Glu | Ser | Gly | Ser | Gly | Lys | Ser | Thr | Leu | Ala | Leu | Ala | Leu | Ala | Gly | |
| | | 375 | | | | | 380 | | | | | 385 | | | | | |
| | ctc | cta | cct | ctc | acc | tct | ggg | ttc | tta | act | ttt | aac | ggc | acc | cca | atc | 1315 |
| | Leu | Leu | Pro | Leu | Thr | Ser | Gly | Phe | Leu | Thr | Phe | Asn | Gly | Thr | Pro | Ile | |
| | 390 | | | | | 395 | | | | | 400 | | | | | 405 | |
| | aag | ttg | cat | tct | aaa | cac | gga | cgc | cat | caa | tta | cga | tct | caa | gta | cgg | 1363 |
| | Lys | Leu | His | Ser | Lys | His | Gly | Arg | His | Gln | Leu | Arg | Ser | Gln | Val | Arg | |
| | | | | | 410 | | | | 415 | | | | | | 420 | | |
| 50 | ttg | gtc | ttt | caa | aat | cca | caa | gct | tca | tta | aac | ccg | cga | aaa | act | atc | 1411 |
| | Leu | Val | Phe | Gln | Asn | Pro | Gln | Ala | Ser | Leu | Asn | Pro | Arg | Lys | Thr | Ile | |
| | | | | 425 | | | | | 430 | | | | | 435 | | | |
| | cta | gat | agt | tta | ggc | cac | tct | ctg | ctt | tac | cat | aaa | ctc | gtc | cca | aaa | 1459 |
| | Leu | Asp | Ser | Leu | Gly | His | Ser | Leu | Leu | Tyr | His | Lys | Leu | Val | Pro | Lys | |
| | | | 440 | | | | | 445 | | | | | 450 | | | | |
| 60 | gaa | aaa | gta | cta | gca | acg | gta | agg | gaa | tat | tta | gaa | ttg | gta | ggg | tta | 1507 |
| | Glu | Lys | Val | Leu | Ala | Thr | Val | Arg | Glu | Tyr | Leu | Glu | Leu | Val | Gly | Leu | |
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Gln Gln Arg Val Ser Ile Ala Arg Ala Leu Leu Gly Val Pro Gln Leu
                      490                      495                      500

10 att att tgt gac gaa att gtt tct gct cta gat tta tct att caa gca 1651
Ile Ile Cys Asp Glu Ile Val Ser Ala Leu Asp Leu Ser Ile Gln Ala
                      505                      510                      515

caa att ctg aat atg ctt gcc gag ctg caa aaa aaa ctc agc ctc aca 1699
Gln Ile Leu Asn Met Leu Ala Glu Leu Gln Lys Lys Leu Ser Leu Thr
                      520                      525                      530

20 tat ctc ttc att tcg cat gat ctt gcc gtt gta cgc tcg ttc tgc aca 1747
Tyr Leu Phe Ile Ser His Asp Leu Ala Val Val Arg Ser Phe Cys Thr
                      535                      540                      545

gag gta ttc att atg tat aag ggg caa att gta gaa aaa gga aat aca 1795
Glu Val Phe Ile Met Tyr Lys Gly Gln Ile Val Glu Lys Gly Asn Thr
550                      555                      560                      565

aaa cgc att ttt tct gat cca caa cat cct tat acg cgc atg ttg tta 1843
Lys Arg Ile Phe Ser Asp Pro Gln His Pro Tyr Thr Arg Met Leu Leu
                      570                      575                      580

30 aat gcc caa ctt cca gag act cct gat caa agg caa tct aaa cct ata 1891
Asn Ala Gln Leu Pro Glu Thr Pro Asp Gln Arg Gln Ser Lys Pro Ile
                      585                      590                      595

ttc caa gaa tat cac aaa gat tct gaa gaa tct tgc tct aca gga tgc 1939
Phe Gln Glu Tyr His Lys Asp Ser Glu Glu Ser Cys Ser Thr Gly Cys
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40 tac ttt tac aat cgt tgt cca caa aaa caa gaa gct tgc aag tca gag 1987
Tyr Phe Tyr Asn Arg Cys Pro Gln Lys Gln Glu Ala Cys Lys Ser Glu
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atc atc cca aat caa gga gac gcg cac cat aca tac cgt tgt atc cat 2035
Ile Ile Pro Asn Gln Gly Asp Ala His His Thr Tyr Arg Cys Ile His
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 Met Pro Gly Ile Glu
 1 5

aaa gca gca aca aca gtg gct gta cct caa gac aaa tct gaa gaa gaa 163
 Lys Ala Ala Thr Thr Val Ala Val Pro Gln Asp Lys Ser Glu Glu Glu
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30 aaa gtt aaa gag cga ttg aca aag cgg gaa ctt acc tgt gaa gac ctt 211
 Lys Val Lys Glu Arg Leu Thr Lys Arg Glu Leu Thr Cys Glu Asp Leu
 25 30 35

aaa gat aac ggc tat act gtc aat ttt gaa gac att tct att tta gag 259
 Lys Asp Asn Gly Tyr Thr Val Asn Phe Glu Asp Ile Ser Ile Leu Glu
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 Leu Leu Gln Phe Val Ser Lys Ile Ser Gly Thr Asn Phe Val Phe Asp
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 90 95 100

50 gac ttg aag gtt gtt gaa caa ggc aat aac gtc ctt atc tat cgt aat 451
 Asp Leu Lys Val Val Glu Gln Gly Asn Asn Val Leu Ile Tyr Arg Asn
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cct cat ctt tct aag cta tcc aca gta gtc aca gac agc tcc tta aaa 499
 Pro His Leu Ser Lys Leu Ser Thr Val Val Thr Asp Ser Ser Leu Lys
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gaa acg tgt gaa gct gtt gtg gtt acc cga gtg ttc cgt ctt tac agg 547
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 135 140 145

60

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| | | | | | | | | | | | | | | | | | |
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| | cgt | cag | ccc | tct | gca | gca | gta | aat | att | att | caa | cct | tta | ctt | tcc | cat | 595 |
| | Arg | Gln | Pro | Ser | Ala | Ala | Val | Asn | Ile | Ile | Gln | Pro | Leu | Leu | Ser | His | |
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| | gat | gct | atc | gtt | agt | gct | tca | gaa | gct | act | cgt | cat | gtt | atc | atc | tcg | 643 |
| | Asp | Ala | Ile | Val | Ser | Ala | Ser | Glu | Ala | Thr | Arg | His | Val | Ile | Ile | Ser | |
| | | | | | 170 | | | | | 175 | | | | | | 180 | |
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| | Asp | Ile | Ala | Gly | Asn | Val | Asp | Lys | Val | Ser | Asp | Leu | Leu | Ala | Ala | Leu | |
| | | | | 185 | | | | | 190 | | | | | 195 | | | |
| | gat | tgc | cca | ggc | aca | tct | gtg | gac | atg | act | gaa | tac | gaa | gtt | aaa | tat | 739 |
| | Asp | Cys | Pro | Gly | Thr | Ser | Val | Asp | Met | Thr | Glu | Tyr | Glu | Val | Lys | Tyr | |
| | | | 200 | | | | | 205 | | | | | 210 | | | | |
| 20 | gcc | aat | ccc | gca | gct | ctt | gtt | agc | tac | tgc | caa | gat | gtt | ctt | ggc | act | 787 |
| | Ala | Asn | Pro | Ala | Ala | Leu | Val | Ser | Tyr | Cys | Gln | Asp | Val | Leu | Gly | Thr | |
| | | 215 | | | | | 220 | | | | | 225 | | | | | |
| | ctg | gcc | gaa | gat | gat | gct | ttc | caa | atg | ttc | atc | caa | cct | gga | acg | aac | 835 |
| | Leu | Ala | Glu | Asp | Asp | Ala | Phe | Gln | Met | Phe | Ile | Gln | Pro | Gly | Thr | Asn | |
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| | aaa | att | ttc | gtc | gtc | tct | tca | cca | cgt | ctt | gca | aat | aag | gca | gag | cag | 883 |
| | Lys | Ile | Phe | Val | Val | Ser | Ser | Pro | Arg | Leu | Ala | Asn | Lys | Ala | Glu | Gln | |
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| | Leu | Leu | Lys | Ser | Leu | Asp | Val | Pro | Glu | Met | Ala | His | Thr | Leu | Asp | Asp | |
| | | | | 265 | | | | 270 | | | | | | 275 | | | |
| | cct | gca | agt | act | gcc | ttg | gct | ttg | gga | gga | aca | gga | acc | acg | agc | cct | 979 |
| | Pro | Ala | Ser | Thr | Ala | Leu | Ala | Leu | Gly | Gly | Thr | Gly | Thr | Thr | Ser | Pro | |
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| 40 | aag | agt | ttg | cgg | ttc | ttt | atg | tac | aag | ctg | aag | tat | caa | aat | gga | gaa | 1027 |
| | Lys | Ser | Leu | Arg | Phe | Phe | Met | Tyr | Lys | Leu | Lys | Tyr | Gln | Asn | Gly | Glu | |
| | | 295 | | | | | 300 | | | | | 305 | | | | | |
| | gtg | att | gct | aat | gcc | ctc | caa | gat | atc | ggc | tac | aat | cta | tat | gta | acc | 1075 |
| | Val | Ile | Ala | Asn | Ala | Leu | Gln | Asp | Ile | Gly | Tyr | Asn | Leu | Tyr | Val | Thr | |
| | 310 | | | | | 315 | | | | | 320 | | | | | 325 | |
| | aca | gct | atg | gac | gaa | gat | ttc | att | aac | act | ctc | aat | agt | atc | cag | tgg | 1123 |
| | Thr | Ala | Met | Asp | Glu | Asp | Phe | Ile | Asn | Thr | Leu | Asn | Ser | Ile | Gln | Trp | |
| | | | | | 330 | | | | | 335 | | | | | 340 | | |
| 50 | tta | gag | gtc | aat | aac | tcc | ata | gtt | att | atc | gga | aac | caa | ggg | aat | gtc | 1171 |
| | Leu | Glu | Val | Asn | Asn | Ser | Ile | Val | Ile | Ile | Gly | Asn | Gln | Gly | Asn | Val | |
| | | | | 345 | | | | | 350 | | | | | 355 | | | |
| | gac | aga | gtt | att | ggc | ctc | tta | aac | ggc | tta | gat | tta | cct | cct | aaa | cag | 1219 |
| | Asp | Arg | Val | Ile | Gly | Leu | Leu | Asn | Gly | Leu | Asp | Leu | Pro | Pro | Lys | Gln | |
| | | | 360 | | | | | 365 | | | | | 370 | | | | |
| 60 | gtt | tac | atc | gaa | gtt | tta | att | cta | gat | acc | agc | tta | gag | aaa | tcc | tgg | 1267 |
| | Val | Tyr | Ile | Glu | Val | Leu | Ile | Leu | Asp | Thr | Ser | Leu | Glu | Lys | Ser | Trp | |
| | | 375 | | | | 380 | | | | | | 385 | | | | | |

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| | | |
|----|---|------|
| | gac ttt gga gtg caa tgg gta gcc cta ggt gat gaa caa agt aaa gta | 1315 |
| | Asp Phe Gly Val Gln Trp Val Ala Leu Gly Asp Glu Gln Ser Lys Val | |
| | 390 395 400 405 | |
| | gct tat gct tct gga cta ttg aat aat act ggc ata gcc aca cct aca | 1363 |
| | Ala Tyr Ala Ser Gly Leu Leu Asn Asn Thr Gly Ile Ala Thr Pro Thr | |
| | 410 415 420 | |
| 10 | aaa gca act gtc cct ccc ggc acg cca aat cct ggt tcg atc cct ctt | 1411 |
| | Lys Ala Thr Val Pro Pro Gly Thr Pro Asn Pro Gly Ser Ile Pro Leu | |
| | 425 430 435 | |
| | cct acg cca gga caa ttg aca ggg ttc tca gat atg ctg aac tct tcg | 1459 |
| | Pro Thr Pro Gly Gln Leu Thr Gly Phe Ser Asp Met Leu Asn Ser Ser | |
| | 440 445 450 | |
| 20 | tca gca ttc ggt cta gga atc atc gga aat gtc cta agt cat aaa ggg | 1507 |
| | Ser Ala Phe Gly Leu Gly Ile Ile Gly Asn Val Leu Ser His Lys Gly | |
| | 455 460 465 | |
| | aag tct ttc ctt act ttg gga ggc tta tta agt gcc tta gat caa gat | 1555 |
| | Lys Ser Phe Leu Thr Leu Gly Gly Leu Leu Ser Ala Leu Asp Gln Asp | |
| | 470 475 480 485 | |
| | gga gat act gtc att gtc ttg aat cct aga atc atg gct cag gat acg | 1603 |
| | Gly Asp Thr Val Ile Val Leu Asn Pro Arg Ile Met Ala Gln Asp Thr | |
| | 490 495 500 | |
| 30 | caa caa gct tcg ttt ttt gta ggg caa acg gtc cct tac caa act atc | 1651 |
| | Gln Gln Ala Ser Phe Phe Val Gly Gln Thr Val Pro Tyr Gln Thr Ile | |
| | 505 510 515 | |
| | aaa tac tat atc caa gaa aca gga act gta acg caa aat atc gat tat | 1699 |
| | Lys Tyr Tyr Ile Gln Glu Thr Gly Thr Val Thr Gln Asn Ile Asp Tyr | |
| | 520 525 530 | |
| 40 | gaa gat att gga gtg aac ctt gtc gtt acc tct aca gtt gct ccc aac | 1747 |
| | Glu Asp Ile Gly Val Asn Leu Val Val Thr Ser Thr Val Ala Pro Asn | |
| | 535 540 545 | |
| | aat gta gtt aca cta caa atc gaa cag acg atc tca gaa tta cat tcc | 1795 |
| | Asn Val Val Thr Leu Gln Ile Glu Gln Thr Ile Ser Glu Leu His Ser | |
| | 550 555 560 565 | |
| | gcg tct gga tca cta aca cct gtc aca gat aaa act tat gca gcc aca | 1843 |
| | Ala Ser Gly Ser Leu Thr Pro Val Thr Asp Lys Thr Tyr Ala Ala Thr | |
| | 570 575 580 | |
| 50 | cgc tta caa att ccc gac ggt tgt ttc tta gtt atg agt ggg cat atc | 1891 |
| | Arg Leu Gln Ile Pro Asp Gly Cys Phe Leu Val Met Ser Gly His Ile | |
| | 585 590 595 | |
| | aga gat aaa act aca aaa gtg gtt tca gga gtg cct ttg cta aac tcc | 1939 |
| | Arg Asp Lys Thr Thr Lys Val Val Ser Gly Val Pro Leu Leu Asn Ser | |
| | 600 605 610 | |
| 60 | ata cca tta att cgt ggt tta ttt agc cgt acc atc gac caa agg caa | 1987 |
| | Ile Pro Leu Ile Arg Gly Leu Phe Ser Arg Thr Ile Asp Gln Arg Gln | |
| | 615 620 625 | |

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aaa cgc aat atc atg atg ttt att aag cct aag gtg att agt agc ttt 2035
 Lys Arg Asn Ile Met Met Phe Ile Lys Pro Lys Val Ile Ser Ser Phe
 630 635 640 645

gaa gaa ggc act cgt gtt acc aat aag gaa gga tac aga tac aat tgg 2083
 Glu Glu Gly Thr Arg Val Thr Asn Lys Glu Gly Tyr Arg Tyr Asn Trp
 650 655 660

10

gaa gct gat gaa gga tcc atg caa gtg gcc cct cgc cat gct cct gaa 2131
 Glu Ala Asp Glu Gly Ser Met Gln Val Ala Pro Arg His Ala Pro Glu
 665 670 675

tgc caa gga cct cct tct tta cag gct gaa agt gac ttt aaa ata ata 2179
 Cys Gln Gly Pro Pro Ser Leu Gln Ala Glu Ser Asp Phe Lys Ile Ile
 680 685 690

20

gaa ata gaa gct cag tagtggtata taaaagagga agatgatatt ctccgccgtg 2234
 Glu Ile Glu Ala Gln
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gaatagcttc tgactctgtt gcattcaggg ggaaagccaa gaagatgtag agtcggccgt 2294
 ataact 2300

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 30 <213> Chlamydia pneumoniae

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gagatagtct tgttttaaag gaggagggga aaacggttta atg agc aga aaa gac 115
 Met Ser Arg Lys Asp
 1 5

aat gag gtt tcc tta gct cgt tca att ttt aat ata tta tcc gga act 163
 Asn Glu Val Ser Leu Ala Arg Ser Ile Phe Asn Ile Leu Ser Gly Thr
 10 15 20

60

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | ttc | tgt | agt | cgt | att | aca | ggg | ata | ttt | cga | gaa | att | gca | atg | gca | acc | 211 |
| | Phe | Cys | Ser | Arg | Ile | Thr | Gly | Ile | Phe | Arg | Glu | Ile | Ala | Met | Ala | Thr | |
| | | | | 25 | | | | | 30 | | | | | 35 | | | |
| | tat | ttt | gga | gct | gat | cca | att | gta | gct | gct | ttc | tgg | tta | ggg | ttc | cgt | 259 |
| | Tyr | Phe | Gly | Ala | Asp | Pro | Ile | Val | Ala | Ala | Phe | Trp | Leu | Gly | Phe | Arg | |
| | | | 40 | | | | | 45 | | | | | 50 | | | | |
| 10 | act | gtt | ttt | ttc | tta | aga | aaa | att | tta | gga | ggg | ctc | att | cta | gaa | caa | 307 |
| | Thr | Val | Phe | Phe | Leu | Arg | Lys | Ile | Leu | Gly | Gly | Leu | Ile | Leu | Glu | Gln | |
| | | 55 | | | | | 60 | | | | | 65 | | | | | |
| | gcc | ttc | atc | cct | cat | ttt | gaa | ttt | ctc | cgt | gct | caa | agt | ctc | gat | cgt | 355 |
| | Ala | Phe | Ile | Pro | His | Phe | Glu | Phe | Leu | Arg | Ala | Gln | Ser | Leu | Asp | Arg | |
| | 70 | | | | | 75 | | | | 80 | | | | | | 85 | |
| 20 | gcg | gcg | ttt | ttt | ttc | cga | cgc | ttt | tct | aga | ttg | att | aaa | ggc | agc | act | 403 |
| | Ala | Ala | Phe | Phe | Phe | Arg | Arg | Phe | Ser | Arg | Leu | Ile | Lys | Gly | Ser | Thr | |
| | | | | | 90 | | | | | 95 | | | | | 100 | | |
| | att | ata | ttc | act | ctg | ctt | att | gaa | gca | gta | ttg | tgg | gta | ttc | ttc | aat | 451 |
| | Ile | Ile | Phe | Thr | Leu | Leu | Ile | Glu | Ala | Val | Leu | Trp | Val | Phe | Phe | Asn | |
| | | | | 105 | | | | 110 | | | | | | 115 | | | |
| | aac | gtt | gaa | gag | ggg | act | tac | gat | atg | att | ctc | ctt | act | atg | ata | ctc | 499 |
| | Asn | Val | Glu | Glu | Gly | Thr | Tyr | Asp | Met | Ile | Leu | Leu | Thr | Met | Ile | Leu | |
| | | | 120 | | | | | 125 | | | | | 130 | | | | |
| 30 | ttg | ccc | tgt | ggc | att | ttc | tta | atg | atg | tac | aat | gta | aac | ggc | gct | ttg | 547 |
| | Leu | Pro | Cys | Gly | Ile | Phe | Leu | Met | Met | Tyr | Asn | Val | Asn | Gly | Ala | Leu | |
| | | 135 | | | | | 140 | | | | | 145 | | | | | |
| | ctt | cac | tgt | gga | aat | aag | ttt | ttc | ggg | gtg | gga | tta | gct | ccc | gta | gtt | 595 |
| | Leu | His | Cys | Gly | Asn | Lys | Phe | Phe | Gly | Val | Gly | Leu | Ala | Pro | Val | Val | |
| | 150 | | | | | 155 | | | | | 160 | | | | | 165 | |
| 40 | gta | aat | atc | att | tgg | att | ttc | ttt | gtt | ata | gcg | gct | cgt | cat | tca | gat | 643 |
| | Val | Asn | Ile | Ile | Trp | Ile | Phe | Phe | Val | Ile | Ala | Ala | Arg | His | Ser | Asp | |
| | | | | | 170 | | | | | 175 | | | | | 180 | | |
| | cct | aga | gag | cgt | att | atc | ggg | tta | tcc | gtg | gct | cta | gtt | atc | ggg | ttt | 691 |
| | Pro | Arg | Glu | Arg | Ile | Ile | Gly | Leu | Ser | Val | Ala | Leu | Val | Ile | Gly | Phe | |
| | | | | 185 | | | | | 190 | | | | | 195 | | | |
| | ttc | ttc | gaa | tgg | tta | atc | acg | gtt | cct | gga | gta | tgg | aaa | ttt | cta | tta | 739 |
| | Phe | Phe | Glu | Trp | Leu | Ile | Thr | Val | Pro | Gly | Val | Trp | Lys | Phe | Leu | Leu | |
| | | | 200 | | | | | 205 | | | | | 210 | | | | |
| 50 | gaa | gcg | aag | agc | cca | cct | caa | gaa | cac | gat | agt | gtt | cga | gct | tta | tta | 787 |
| | Glu | Ala | Lys | Ser | Pro | Pro | Gln | Glu | His | Asp | Ser | Val | Arg | Ala | Leu | Leu | |
| | | 215 | | | | | 220 | | | | | 225 | | | | | |
| | gct | ccc | tta | tct | ttg | ggg | att | tta | act | tca | agc | atc | ttc | cag | ctg | aac | 835 |
| | Ala | Pro | Leu | Ser | Leu | Gly | Ile | Leu | Thr | Ser | Ser | Ile | Phe | Gln | Leu | Asn | |
| | 230 | | | | | 235 | | | | | 240 | | | | | 245 | |
| 60 | ctt | ctt | tct | gat | atc | tgc | ttg | gct | cgc | tat | gta | cat | gaa | ata | ggc | cct | 883 |
| | Leu | Leu | Ser | Asp | Ile | Cys | Leu | Ala | Arg | Tyr | Val | His | Glu | Ile | Gly | Pro | |
| | | | | | 250 | | | | | 255 | | | | | 260 | | |

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| | cta | tat | ctt | atg | tac | tcc | tta | aag | att | tat | cag | ctc | ccc | ata | cat | ctc | 931 |
| | Leu | Tyr | Leu | Met | Tyr | Ser | Leu | Lys | Ile | Tyr | Gln | Leu | Pro | Ile | His | Leu | |
| | | | | 265 | | | | | 270 | | | | | 275 | | | |
| | ttt | ggc | ttt | ggt | gtg | ttt | acc | gtt | ctc | ctc | cca | gca | att | tct | cgt | tgt | 979 |
| | Phe | Gly | Phe | Gly | Val | Phe | Thr | Val | Leu | Leu | Pro | Ala | Ile | Ser | Arg | Cys | |
| | | | 280 | | | | | 285 | | | | | 290 | | | | |
| 10 | gta | cag | cga | gaa | gat | cat | gag | agg | gga | ttg | aaa | ctt | atg | aag | ttc | gtt | 1027 |
| | Val | Gln | Arg | Glu | Asp | His | Glu | Arg | Gly | Leu | Lys | Leu | Met | Lys | Phe | Val | |
| | | 295 | | | | | 300 | | | | | 305 | | | | | |
| | ctc | acc | cta | acc | atg | tcc | gta | atg | atc | att | atg | aca | gca | ggg | cta | ttg | 1075 |
| | Leu | Thr | Leu | Thr | Met | Ser | Val | Met | Ile | Ile | Met | Thr | Ala | Gly | Leu | Leu | |
| | 310 | | | | | 315 | | | | | 320 | | | | | 325 | |
| 20 | ctc | tta | gct | tta | cct | gga | gtc | cgt | gtc | ctt | tat | gaa | cac | gga | ctt | ttc | 1123 |
| | Leu | Leu | Ala | Leu | Pro | Gly | Val | Arg | Val | Leu | Tyr | Glu | His | Gly | Leu | Phe | |
| | | | | | 330 | | | | | 335 | | | | | 340 | | |
| | cct | cag | agt | gct | gtc | tac | gct | att | gtt | cgt | gta | ttg | cga | ggg | tat | ggg | 1171 |
| | Pro | Gln | Ser | Ala | Val | Tyr | Ala | Ile | Val | Arg | Val | Leu | Arg | Gly | Tyr | Gly | |
| | | | | 345 | | | | | 350 | | | | | 355 | | | |
| | gcc | agt | att | atc | cct | atg | gcc | ttg | gct | cct | tta | gtc | tct | gtt | ctt | ttt | 1219 |
| | Ala | Ser | Ile | Ile | Pro | Met | Ala | Leu | Ala | Pro | Leu | Val | Ser | Val | Leu | Phe | |
| | | | 360 | | | | | 365 | | | | | 370 | | | | |
| 30 | tat | gca | cag | cgg | cag | tat | gct | gtt | ccg | ctc | ttt | ata | gga | atc | ggg | acg | 1267 |
| | Tyr | Ala | Gln | Arg | Gln | Tyr | Ala | Val | Pro | Leu | Phe | Ile | Gly | Ile | Gly | Thr | |
| | | 375 | | | | | 380 | | | | | 385 | | | | | |
| | gct | ttg | gcc | aat | att | gtt | tta | agc | ttg | gtt | cta | ggg | cgt | tgg | gtt | tta | 1315 |
| | Ala | Leu | Ala | Asn | Ile | Val | Leu | Ser | Leu | Val | Leu | Gly | Arg | Trp | Val | Leu | |
| | 390 | | | | | 395 | | | | | 400 | | | | | 405 | |
| 40 | aaa | gac | gtc | tcg | ggc | att | tcc | tat | gct | aca | tcc | ata | act | gct | tgg | gtg | 1363 |
| | Lys | Asp | Val | Ser | Gly | Ile | Ser | Tyr | Ala | Thr | Ser | Ile | Thr | Ala | Trp | Val | |
| | | | | | 410 | | | | | 415 | | | | | 420 | | |
| | cag | tta | tat | ttc | ctc | tgg | tat | tat | tct | tcg | aaa | aga | ctc | cct | atg | tac | 1411 |
| | Gln | Leu | Tyr | Phe | Leu | Trp | Tyr | Tyr | Ser | Ser | Lys | Arg | Leu | Pro | Met | Tyr | |
| | | | | 425 | | | | | 430 | | | | | 435 | | | |
| | tct | aag | tta | ctt | tgg | gag | agc | atc | cgg | cgt | tcc | ata | aaa | gtt | atg | gga | 1459 |
| | Ser | Lys | Leu | Leu | Trp | Glu | Ser | Ile | Arg | Arg | Ser | Ile | Lys | Val | Met | Gly | |
| | | | 440 | | | | | 445 | | | | | 450 | | | | |
| 50 | acc | act | atg | ctt | gct | tgt | atg | att | act | cta | ggc | tta | aat | atc | ctt | acg | 1507 |
| | Thr | Thr | Met | Leu | Ala | Cys | Met | Ile | Thr | Leu | Gly | Leu | Asn | Ile | Leu | Thr | |
| | | | 455 | | | | 460 | | | | | 465 | | | | | |
| | caa | act | aca | tat | gta | att | ttc | tta | aac | ccc | ctc | aca | cca | ctt | gct | tgg | 1555 |
| | Gln | Thr | Thr | Tyr | Val | Ile | Phe | Leu | Asn | Pro | Leu | Thr | Pro | Leu | Ala | Trp | |
| | 470 | | | | | 475 | | | | | 480 | | | | | 485 | |
| 60 | ccc | tta | tcc | tcc | ata | acg | gct | caa | gca | att | gct | ttt | tta | tct | gag | agc | 1603 |
| | Pro | Leu | Ser | Ser | Ile | Thr | Ala | Gln | Ala | Ile | Ala | Phe | Leu | Ser | Glu | Ser | |
| | | | | | 490 | | | | | 495 | | | | | 500 | | |

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tgc att ttc ttg gct ttt ttg ttt ggt ttt gca aaa ctg ctt cga gta 1651
 Cys Ile Phe Leu Ala Phe Leu Phe Gly Phe Ala Lys Leu Leu Arg Val
 505 510 515

gaa gat ctt att aat ttg gct tct ttt gaa tac tgg cgt ggg caa cgg 1699
 Glu Asp Leu Ile Asn Leu Ala Ser Phe Glu Tyr Trp Arg Gly Gln Arg
 520 525 530

10

ggt ctt ttg caa aga caa cac gtg atg caa gac act caa aat 1741
 Gly Leu Leu Gln Arg Gln His Val Met Gln Asp Thr Gln Asn
 535 540 545

taatcatggt tggtttcttgt agctcagtcg ctttctttta gctttaagtt ttgatagcct 1801
 gcttggtctt ctgtttctac acttaatat gatactaagg atactatgaa aaaacaggta 1861
 tatcaatggt tagcgagtgt gggttctttta gcgctgaca 1900

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 Met Lys Thr Ser Arg
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50

aat aaa cag tgc aaa ata aca gat ccc tta agt aaa tct tcc ttc ttt 163
 Asn Lys Gln Cys Lys Ile Thr Asp Pro Leu Ser Lys Ser Ser Phe Phe
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gtt gga gcc tta att tta ggt aaa act aca ata ctc ctt aat gcg act 211
 Val Gly Ala Leu Ile Leu Gly Lys Thr Thr Ile Leu Leu Asn Ala Thr
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 Pro Leu Ser Asp Tyr Phe Asp Asn Gln Ala Asn Gln Leu Thr Thr Leu
 40 45 50

60

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | ttc | cct | cta | att | gat | act | ctt | act | aac | atg | act | ccc | tac | tct | cat | aga | 307 |
| | Phe | Pro | Leu | Ile | Asp | Thr | Leu | Thr | Asn | Met | Thr | Pro | Tyr | Ser | His | Arg | |
| | 55 | | | | | | 60 | | | | | 65 | | | | | |
| | gca | aca | ctt | ttt | gga | gtt | agg | gat | gac | act | aac | caa | gac | att | gtc | ctc | 355 |
| | Ala | Thr | Leu | Phe | Gly | Val | Arg | Asp | Asp | Thr | Asn | Gln | Asp | Ile | Val | Leu | |
| | 70 | | | | | 75 | | | | | 80 | | | | | 85 | |
| 10 | gat | cac | cag | aat | tcc | ata | gaa | agc | tgg | ttc | gaa | aac | ttc | tct | caa | gac | 403 |
| | Asp | His | Gln | Asn | Ser | Ile | Glu | Ser | Trp | Phe | Glu | Asn | Phe | Ser | Gln | Asp | |
| | | | | | 90 | | | | | 95 | | | | | 100 | | |
| | ggc | ggg | gct | ctc | tct | tgc | aaa | tca | ctt | gcc | ata | acg | aat | aca | aaa | aac | 451 |
| | Gly | Gly | Ala | Leu | Ser | Cys | Lys | Ser | Leu | Ala | Ile | Thr | Asn | Thr | Lys | Asn | |
| | | | | 105 | | | | | 110 | | | | | 115 | | | |
| 20 | caa | att | ctt | ttc | cta | aat | agc | ttt | gct | att | aaa | aga | gct | ggg | gcg | atg | 499 |
| | Gln | Ile | Leu | Phe | Leu | Asn | Ser | Phe | Ala | Ile | Lys | Arg | Ala | Gly | Ala | Met | |
| | | | 120 | | | | | 125 | | | | | 130 | | | | |
| | tat | gtt | gat | ggg | aat | ttc | gat | ctt | tct | gag | aat | cat | ggg | tcc | atc | att | 547 |
| | Tyr | Val | Asp | Gly | Asn | Phe | Asp | Leu | Ser | Glu | Asn | His | Gly | Ser | Ile | Ile | |
| | | 135 | | | | | 140 | | | | | 145 | | | | | |
| | ttc | tct | ggg | aat | tta | agc | ttt | cct | aat | gca | agt | aat | ttc | gct | gat | act | 595 |
| | Phe | Ser | Gly | Asn | Leu | Ser | Phe | Pro | Asn | Ala | Ser | Asn | Phe | Ala | Asp | Thr | |
| | 150 | | | | | 155 | | | | | 160 | | | | | 165 | |
| 30 | tgt | aca | ggg | gga | gct | gtt | tta | tgt | tcg | aaa | aat | gtt | aca | atc | tca | aaa | 643 |
| | Cys | Thr | Gly | Gly | Ala | Val | Leu | Cys | Ser | Lys | Asn | Val | Thr | Ile | Ser | Lys | |
| | | | | | 170 | | | | | 175 | | | | | 180 | | |
| | aat | caa | gga | acc | gca | tac | ttc | att | aac | aac | aag | gca | aaa | tct | tca | gga | 691 |
| | Asn | Gln | Gly | Thr | Ala | Tyr | Phe | Ile | Asn | Asn | Lys | Ala | Lys | Ser | Ser | Gly | |
| | | | | 185 | | | | | 190 | | | | | 195 | | | |
| 40 | gga | gca | atc | caa | gct | gca | atc | ata | aac | att | aag | gac | aac | act | ggc | cct | 739 |
| | Gly | Ala | Ile | Gln | Ala | Ala | Ile | Ile | Asn | Ile | Lys | Asp | Asn | Thr | Gly | Pro | |
| | | | 200 | | | | | 205 | | | | | 210 | | | | |
| | tgc | ctg | ttt | ttt | aat | aat | gct | gca | ggc | gga | aca | gcg | ggg | ggc | gcg | ttg | 787 |
| | Cys | Leu | Phe | Phe | Asn | Asn | Ala | Ala | Gly | Gly | Thr | Ala | Gly | Gly | Ala | Leu | |
| | | 215 | | | | | 220 | | | | | 225 | | | | | |
| | ttc | gct | aat | gct | tgt | aga | att | gag | aat | aat | tct | cag | cct | atc | tat | ttt | 835 |
| | Phe | Ala | Asn | Ala | Cys | Arg | Ile | Glu | Asn | Asn | Ser | Gln | Pro | Ile | Tyr | Phe | |
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| 50 | ttg | aat | aac | caa | tca | ggg | ctg | ggg | ggg | gca | ata | aga | gta | cat | caa | gag | 883 |
| | Leu | Asn | Asn | Gln | Ser | Gly | Leu | Gly | Gly | Ala | Ile | Arg | Val | His | Gln | Glu | |
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| | tgc | att | ctt | aca | aag | aat | acc | ggg | tct | gtg | atc | ttc | aac | aat | aat | ttt | 931 |
| | Cys | Ile | Leu | Thr | Lys | Asn | Thr | Gly | Ser | Val | Ile | Phe | Asn | Asn | Asn | Phe | |
| | | | | 265 | | | | 270 | | | | | | 275 | | | |
| 60 | gcc | atg | gaa | gcg | gac | atc | tct | gct | aac | cat | tcc | tct | gga | ggg | gct | atc | 979 |
| | Ala | Met | Glu | Ala | Asp | Ile | Ser | Ala | Asn | His | Ser | Ser | Gly | Gly | Ala | Ile | |
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| | | |
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| | Asp Asn Asn Thr Ala Ala Arg Asp Gly Gly Ala Ile Cys Thr Gln Ser | |
| | 310 315 320 325 | |
| 10 | cta act ata caa gac agt ggt ccc gtc tat ttc aca aac aat cag gga | 1123 |
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| | 330 335 340 | |
| | act tgg ggc ggc gct atc atg ctc cgt caa gat ggt gca tgc act tta | 1171 |
| | Thr Trp Gly Gly Ala Ile Met Leu Arg Gln Asp Gly Ala Cys Thr Leu | |
| | 345 350 355 | |
| 20 | ttt gct gat cag gga gat att att ttt tat aat aat aga cac ttc aaa | 1219 |
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| | 360 365 370 | |
| | gat act ttc agc aat cat gtt tct gta aac tgc acg cgt aat gtc tca | 1267 |
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| | 375 380 385 | |
| | tta aca gtt gga gca agt caa ggt cat tct gct acc ttc tat gat ccc | 1315 |
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| 30 | ata cta caa aga tat act ata caa aac tct atc caa aaa ttt aat cct | 1363 |
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| | aat cca gaa cac ctc gga act atc ttg ttc tcc tca aca tat att ccg | 1411 |
| | Asn Pro Glu His Leu Gly Thr Ile Leu Phe Ser Ser Thr Tyr Ile Pro | |
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| | 470 475 480 485 | |
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| | 490 495 500 | |
| | ggt tct gta att aac atc aat aat ctt gca att aac ctt ccc tct atc | 1651 |
| | Gly Ser Val Ile Asn Ile Asn Asn Leu Ala Ile Asn Leu Pro Ser Ile | |
| | 505 510 515 | |
| 60 | tta ggc aac aga gtt gct ccc aag cta tgg att cgc ccc aca ggt tca | 1699 |
| | Leu Gly Asn Arg Val Ala Pro Lys Leu Trp Ile Arg Pro Thr Gly Ser | |
| | 520 525 530 | |

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| | tca | gca | ccc | tat | agc | gaa | gat | aat | aac | cct | ata | atc | aat | ctc | tca | gga | 1747 |
| | Ser | Ala | Pro | Tyr | Ser | Glu | Asp | Asn | Asn | Pro | Ile | Ile | Asn | Leu | Ser | Gly | |
| | | 535 | | | | | 540 | | | | | 545 | | | | | |
| | cct | ttg | agc | cta | ctg | gat | gac | gag | aac | cta | gat | ccc | tat | gat | act | gca | 1795 |
| | Pro | Leu | Ser | Leu | Leu | Asp | Asp | Glu | Asn | Leu | Asp | Pro | Tyr | Asp | Thr | Ala | |
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| 10 | gac | ctt | gcc | caa | cct | atc | gca | gaa | gtt | cct | ctt | ctg | tat | ctc | tta | gac | 1843 |
| | Asp | Leu | Ala | Gln | Pro | Ile | Ala | Glu | Val | Pro | Leu | Leu | Tyr | Leu | Leu | Asp | |
| | | | | | 570 | | | | | 575 | | | | | 580 | | |
| | gtc | aca | gct | aaa | cat | att | aat | acg | gat | aat | ttc | tac | cct | gag | ggc | cta | 1891 |
| | Val | Thr | Ala | Lys | His | Ile | Asn | Thr | Asp | Asn | Phe | Tyr | Pro | Glu | Gly | Leu | |
| | | | | 585 | | | | | 590 | | | | | 595 | | | |
| 20 | aat | aca | act | caa | cac | tac | ggc | tac | caa | ggc | gtt | tgg | tcc | cct | tac | tgg | 1939 |
| | Asn | Thr | Thr | Gln | His | Tyr | Gly | Tyr | Gln | Gly | Val | Trp | Ser | Pro | Tyr | Trp | |
| | | | 600 | | | | | 605 | | | | | 610 | | | | |
| | atc | gaa | aca | atc | aca | act | tct | gat | acc | tct | tct | gaa | gat | act | gtg | aat | 1987 |
| | Ile | Glu | Thr | Ile | Thr | Thr | Ser | Asp | Thr | Ser | Ser | Glu | Asp | Thr | Val | Asn | |
| | | 615 | | | | | | 620 | | | | 625 | | | | | |
| | act | tta | cat | cgc | cag | ctt | tat | ggc | gat | tgg | aca | cct | aca | gga | tat | aag | 2035 |
| | Thr | Leu | His | Arg | Gln | Leu | Tyr | Gly | Asp | Trp | Thr | Pro | Thr | Gly | Tyr | Lys | |
| | 630 | | | | | 635 | | | | | 640 | | | | | 645 | |
| 30 | gta | aac | cca | gaa | aac | aaa | gga | gac | att | gcc | cta | tct | gcc | ttc | tgg | caa | 2083 |
| | Val | Asn | Pro | Glu | Asn | Lys | Gly | Asp | Ile | Ala | Leu | Ser | Ala | Phe | Trp | Gln | |
| | | | | | 650 | | | | | 655 | | | | | 660 | | |
| | tct | ttc | cat | aac | tta | ttt | gcg | aca | cta | cgt | tat | caa | aca | cag | caa | ggc | 2131 |
| | Ser | Phe | His | Asn | Leu | Phe | Ala | Thr | Leu | Arg | Tyr | Gln | Thr | Gln | Gln | Gly | |
| | | | | 665 | | | | | 670 | | | | | 675 | | | |
| 40 | caa | ata | gca | cct | aca | gct | tct | gga | gaa | gct | act | cga | ctc | ttc | gtg | cat | 2179 |
| | Gln | Ile | Ala | Pro | Thr | Ala | Ser | Gly | Glu | Ala | Thr | Arg | Leu | Phe | Val | His | |
| | | | 680 | | | | | 685 | | | | | 690 | | | | |
| | caa | aat | agc | aac | aat | gat | gcg | aaa | gga | ttc | cat | atg | gaa | gct | acg | ggc | 2227 |
| | Gln | Asn | Ser | Asn | Asn | Asp | Ala | Lys | Gly | Phe | His | Met | Glu | Ala | Thr | Gly | |
| | | 695 | | | | | 700 | | | | | 705 | | | | | |
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| | Tyr | Ser | Leu | Gly | Thr | Thr | Ser | Asn | Thr | Ala | Ser | Asn | His | Ser | Phe | Gly | |
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| 50 | gta | aac | ttc | tcc | caa | ctt | ttc | agt | aat | ctc | tac | gag | agc | cac | tcc | gac | 2323 |
| | Val | Asn | Phe | Ser | Gln | Leu | Phe | Ser | Asn | Leu | Tyr | Glu | Ser | His | Ser | Asp | |
| | | | | | 730 | | | | | 735 | | | | | | 740 | |
| | aat | tcc | gtg | gct | tcg | cat | acg | aca | act | gta | gcg | ctc | cag | atc | aat | aat | 2371 |
| | Asn | Ser | Val | Ala | Ser | His | Thr | Thr | Thr | Val | Ala | Leu | Gln | Ile | Asn | Asn | |
| | | | | 745 | | | | | 750 | | | | | 755 | | | |
| 60 | cct | tgg | ctg | caa | gag | aga | ttc | tct | aca | tct | gca | tct | cta | gcc | tac | agc | 2419 |
| | Pro | Trp | Leu | Gln | Glu | Arg | Phe | Ser | Thr | Ser | Ala | Ser | Leu | Ala | Tyr | Ser | |
| | | | 760 | | | | | 765 | | | | | 770 | | | | |

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| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| tac | agc | aac | cac | cat | atc | aaa | gca | tct | gga | tat | tct | gga | aaa | ata | caa | 2467 |
| Tyr | Ser | Asn | His | His | Ile | Lys | Ala | Ser | Gly | Tyr | Ser | Gly | Lys | Ile | Gln | |
| | 775 | | | | | 780 | | | | | 785 | | | | | |

acg gaa ggc aaa tgt tat agt acg aca tta ggg gcg gct ctc tct tgc 2515
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825 830 835

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Gly Asp Lys Ala Arg Lys Phe Ser Val His Lys Pro Leu Tyr Asn Leu
840 845 850

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855 860 865

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Pro Thr Tyr Trp Asn Ile Glu Leu Ala Tyr Gln Pro Val Leu Tyr Gln
870 875 880 885

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Thr Thr Phe Lys Phe
950

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 $\langle 220 \rangle$

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 Thr Phe Val Leu Ala Asn Glu Gly Leu Gln Leu Pro Leu Glu Thr Tyr
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 40 45 50

60

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | atc | ttg | gac | tat | aag | tac | tat | cgg | tcg | aat | gga | ggt | gct | ctt | acc | tgt | 307 |
| | Ile | Leu | Asp | Tyr | Lys | Tyr | Tyr | Arg | Ser | Asn | Gly | Gly | Ala | Leu | Thr | Cys | |
| | | 55 | | | | | 60 | | | | | 65 | | | | | |
| | aag | aat | ctt | ctg | atc | tct | gaa | aat | ata | ggg | aat | gtc | ttc | ttt | gag | aag | 355 |
| | Lys | Asn | Leu | Leu | Ile | Ser | Glu | Asn | Ile | Gly | Asn | Val | Phe | Phe | Glu | Lys | |
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| | Asn | Val | Cys | Pro | Asn | Ser | Gly | Gly | Ala | Ile | Tyr | Ala | Ala | Gln | Asn | Cys | |
| | | | | | 90 | | | | | 95 | | | | | 100 | | |
| | acg | atc | tcc | aag | aat | cag | aac | tat | gca | ttt | act | aca | aac | ttg | gtc | tct | 451 |
| | Thr | Ile | Ser | Lys | Asn | Gln | Asn | Tyr | Ala | Phe | Thr | Thr | Asn | Leu | Val | Ser | |
| | | | | 105 | | | | | 110 | | | | | 115 | | | |
| | gac | aat | cct | aca | gcc | act | gcg | gga | tca | cta | ttg | ggt | gga | gct | ctc | ttt | 499 |
| 20 | Asp | Asn | Pro | Thr | Ala | Thr | Ala | Gly | Ser | Leu | Leu | Gly | Gly | Ala | Leu | Phe | |
| | | | 120 | | | | | 125 | | | | | 130 | | | | |
| | gcc | ata | aat | tgc | tct | att | act | aat | aac | cta | gga | cag | gga | act | ttc | gtt | 547 |
| | Ala | Ile | Asn | Cys | Ser | Ile | Thr | Asn | Asn | Leu | Gly | Gln | Gly | Thr | Phe | Val | |
| | | 135 | | | | | 140 | | | | | 145 | | | | | |
| | gac | aat | ctc | gct | tta | aat | aag | ggg | ggt | gcc | ctc | tat | act | gag | acg | aac | 595 |
| | Asp | Asn | Leu | Ala | Leu | Asn | Lys | Gly | Gly | Ala | Leu | Tyr | Thr | Glu | Thr | Asn | |
| | | 150 | | | | 155 | | | | | 160 | | | | | 165 | |
| 30 | tta | tct | att | aaa | gac | aat | aaa | ggc | ccg | atc | ata | atc | aag | cag | aat | cgg | 643 |
| | Leu | Ser | Ile | Lys | Asp | Asn | Lys | Gly | Pro | Ile | Ile | Ile | Lys | Gln | Asn | Arg | |
| | | | | | 170 | | | | | 175 | | | | | 180 | | |
| | gca | cta | aat | tcg | gac | agt | tta | gga | gga | ggg | att | tat | agt | ggg | aac | tct | 691 |
| | Ala | Leu | Asn | Ser | Asp | Ser | Leu | Gly | Gly | Gly | Ile | Tyr | Ser | Gly | Asn | Ser | |
| | | | | 185 | | | | | 190 | | | | | 195 | | | |
| | cta | aat | ata | gag | gga | aat | tct | gga | gct | ata | cag | atc | aca | agc | aac | tct | 739 |
| 40 | Leu | Asn | Ile | Glu | Gly | Asn | Ser | Gly | Ala | Ile | Gln | Ile | Thr | Ser | Asn | Ser | |
| | | | 200 | | | | | 205 | | | | | 210 | | | | |
| | tca | gga | tct | ggg | gga | ggc | ata | ttt | tct | acc | caa | aca | ctc | acg | atc | tcc | 787 |
| | Ser | Gly | Ser | Gly | Gly | Gly | Ile | Phe | Ser | Thr | Gln | Thr | Leu | Thr | Ile | Ser | |
| | | 215 | | | | | 220 | | | | | 225 | | | | | |
| | tcg | aat | aaa | aaa | ctc | ata | gaa | atc | agt | gaa | aat | tcc | gcg | ttc | gca | aat | 835 |
| | Ser | Asn | Lys | Lys | Leu | Ile | Glu | Ile | Ser | Glu | Asn | Ser | Ala | Phe | Ala | Asn | |
| | | 230 | | | | 235 | | | | | 240 | | | | | 245 | |
| 50 | aac | tat | gga | tcg | aac | ttc | aat | cca | gga | gga | gga | ggt | ctt | act | acc | acc | 883 |
| | Asn | Tyr | Gly | Ser | Asn | Phe | Asn | Pro | Gly | Gly | Gly | Gly | Leu | Thr | Thr | Thr | |
| | | | | | 250 | | | | | 255 | | | | | 260 | | |
| | ttt | tgc | acg | ata | ttg | aac | aac | cga | gaa | ggg | gta | ctc | ttt | aac | aat | aac | 931 |
| | Phe | Cys | Thr | Ile | Leu | Asn | Asn | Arg | Glu | Gly | Val | Leu | Phe | Asn | Asn | Asn | |
| | | | | 265 | | | | 270 | | | | | | 275 | | | |
| | caa | agc | cag | agc | aac | ggt | gga | gcc | att | cat | gcg | aaa | tct | atc | att | atc | 979 |
| 60 | Gln | Ser | Gln | Ser | Asn | Gly | Gly | Ala | Ile | His | Ala | Lys | Ser | Ile | Ile | Ile | |
| | | | 280 | | | | | 285 | | | | | 290 | | | | |

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| | aaa | gaa | aat | ggt | cct | gta | tac | ttt | tta | aat | aac | act | gca | act | cgg | gga | 1027 |
| | Lys | Glu | Asn | Gly | Pro | Val | Tyr | Phe | Leu | Asn | Asn | Thr | Ala | Thr | Arg | Gly | |
| | 295 | | | | | | 300 | | | | | 305 | | | | | |
| | ggg | gct | ctc | ctc | aac | tta | tca | gca | ggt | tct | gga | aac | gga | agc | ttc | atc | 1075 |
| | Gly | Ala | Leu | Leu | Asn | Leu | Ser | Ala | Gly | Ser | Gly | Asn | Gly | Ser | Phe | Ile | |
| | 310 | | | | | 315 | | | | | 320 | | | | | 325 | |
| 10 | tta | tct | gca | gat | aat | gga | gat | att | atc | ttt | aac | aat | aat | acg | gcc | tcc | 1123 |
| | Leu | Ser | Ala | Asp | Asn | Gly | Asp | Ile | Ile | Phe | Asn | Asn | Asn | Thr | Ala | Ser | |
| | | | | | 330 | | | | | 335 | | | | | 340 | | |
| | aag | cat | gcc | ctc | aat | cct | cca | tac | aga | aac | gcc | att | cac | tcg | act | cct | 1171 |
| | Lys | His | Ala | Leu | Asn | Pro | Pro | Tyr | Arg | Asn | Ala | Ile | His | Ser | Thr | Pro | |
| | | | | 345 | | | | | 350 | | | | | 355 | | | |
| 20 | aat | atg | aat | ctg | caa | ata | gga | gcc | cgt | ccc | ggc | tat | cga | gtg | ctg | ttc | 1219 |
| | Asn | Met | Asn | Leu | Gln | Ile | Gly | Ala | Arg | Pro | Gly | Tyr | Arg | Val | Leu | Phe | |
| | | | 360 | | | | | 365 | | | | | 370 | | | | |
| | tat | gat | ccc | ata | gaa | cat | gag | ctc | cct | tcc | tcc | ttc | ccc | ata | ctc | ttt | 1267 |
| | Tyr | Asp | Pro | Ile | Glu | His | Glu | Leu | Pro | Ser | Ser | Phe | Pro | Ile | Leu | Phe | |
| | | 375 | | | | | 380 | | | | | 385 | | | | | |
| | aat | ttc | gaa | acc | ggt | cat | aca | ggt | aca | ggt | tta | ttt | tca | ggg | gaa | cat | 1315 |
| | Asn | Phe | Glu | Thr | Gly | His | Thr | Gly | Thr | Val | Leu | Phe | Ser | Gly | Glu | His | |
| | 390 | | | | | 395 | | | | | 400 | | | | | 405 | |
| 30 | gta | cac | cag | aac | ttt | acc | gat | gaa | atg | aat | ttc | ttt | tcc | tat | tta | agg | 1363 |
| | Val | His | Gln | Asn | Phe | Thr | Asp | Glu | Met | Asn | Phe | Phe | Ser | Tyr | Leu | Arg | |
| | | | | 410 | | | | | | 415 | | | | | 420 | | |
| | aac | act | tcg | gaa | cta | cgt | caa | gga | gtc | ctt | gct | ggt | gaa | gat | ggt | gcg | 1411 |
| | Asn | Thr | Ser | Glu | Leu | Arg | Gln | Gly | Val | Leu | Ala | Val | Glu | Asp | Gly | Ala | |
| | | | | 425 | | | | 430 | | | | | 435 | | | | |
| 40 | ggg | ctg | gcc | tgc | tat | aag | ttc | ttc | caa | cga | gga | ggc | act | cta | ctt | cta | 1459 |
| | Gly | Leu | Ala | Cys | Tyr | Lys | Phe | Phe | Gln | Arg | Gly | Gly | Thr | Leu | Leu | Leu | |
| | | | 440 | | | | 445 | | | | | | 450 | | | | |
| | ggt | caa | ggt | gcg | gtg | atc | acg | aca | gca | gga | acg | att | ccc | aca | cca | tcc | 1507 |
| | Gly | Gln | Gly | Ala | Val | Ile | Thr | Thr | Ala | Gly | Thr | Ile | Pro | Thr | Pro | Ser | |
| | | 455 | | | | 460 | | | | | | 465 | | | | | |
| | tca | aca | cca | acg | aca | gta | gga | agt | act | ata | act | tta | aat | cac | att | gcc | 1555 |
| | Ser | Thr | Pro | Thr | Thr | Val | Gly | Ser | Thr | Ile | Thr | Leu | Asn | His | Ile | Ala | |
| | 470 | | | | | 475 | | | | | 480 | | | | | 485 | |
| 50 | att | gac | ctt | cct | tct | att | ctt | tct | ttt | caa | gct | cag | gct | cca | aaa | att | 1603 |
| | Ile | Asp | Leu | Pro | Ser | Ile | Leu | Ser | Phe | Gln | Ala | Gln | Ala | Pro | Lys | Ile | |
| | | | | | 490 | | | | | 495 | | | | | 500 | | |
| | tgg | att | tac | ccc | aca | aaa | aca | gga | tct | acc | tat | act | gaa | gat | tcc | aac | 1651 |
| | Trp | Ile | Tyr | Pro | Thr | Lys | Thr | Gly | Ser | Thr | Tyr | Thr | Glu | Asp | Ser | Asn | |
| | | | | 505 | | | | 510 | | | | | | 515 | | | |
| 60 | ccg | aca | atc | aca | atc | tca | gga | act | ctc | acc | tta | cgc | aac | agc | aac | aac | 1699 |
| | Pro | Thr | Ile | Thr | Ile | Ser | Gly | Thr | Leu | Thr | Leu | Arg | Asn | Ser | Asn | Asn | |
| | | | 520 | | | | | 525 | | | | | 530 | | | | |

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| | | | | | | | | | | | | | | | | | | |
|----|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| | | gaa | gat | ccc | tac | gat | agt | ctg | gat | ctc | tcg | cac | tct | ctt | gag | aaa | gtt | 1747 |
| | | Glu | Asp | Pro | Tyr | Asp | Ser | Leu | Asp | Leu | Ser | His | Ser | Leu | Glu | Lys | Val | |
| | | 535 | | | | | | 540 | | | | | 545 | | | | | |
| | | ccc | ctt | ctt | tat | att | gtc | gat | gtc | gct | gca | caa | aaa | att | aac | tct | tcg | 1795 |
| | | Pro | Leu | Leu | Tyr | Ile | Val | Asp | Val | Ala | Ala | Gln | Lys | Ile | Asn | Ser | Ser | |
| | | 550 | | | | | 555 | | | | | 560 | | | | | 565 | |
| 10 | | caa | ctg | gat | cta | tcc | aca | tta | aat | tct | ggc | gaa | cac | tat | ggg | tat | caa | 1843 |
| | | Gln | Leu | Asp | Leu | Ser | Thr | Leu | Asn | Ser | Gly | Glu | His | Tyr | Gly | Tyr | Gln | |
| | | | | | | 570 | | | | | 575 | | | | | | | |
| | | ggc | atc | tgg | tcg | acc | tat | tgg | gta | gaa | act | aca | aca | atc | acg | aac | cct | 1891 |
| | | Gly | Ile | Trp | Ser | Thr | Tyr | Trp | Val | Glu | Thr | Thr | Thr | Ile | Thr | Asn | Pro | |
| | | | | | 585 | | | | | 590 | | | | | 595 | | | |
| 20 | | aca | tct | cta | cta | ggc | gcg | aat | aca | aaa | cac | aag | ctg | ctc | tat | gca | aac | 1939 |
| | | Thr | Ser | Leu | Leu | Gly | Ala | Asn | Thr | Lys | His | Lys | Leu | Leu | Tyr | Ala | Asn | |
| | | | | 600 | | | | 605 | | | | | | 610 | | | | |
| | | tgg | tct | cct | cta | ggc | tac | cgt | cct | cat | ccc | gaa | cgt | cga | gga | gaa | ttc | 1987 |
| | | Trp | Ser | Pro | Leu | Gly | Tyr | Arg | Pro | His | Pro | Glu | Arg | Arg | Gly | Glu | Phe | |
| | | 615 | | | | | | 620 | | | | | 625 | | | | | |
| | | att | acg | aat | gcc | ttg | tgg | caa | tcg | gca | tat | acg | gct | ctt | gca | gga | ctc | 2035 |
| | | Ile | Thr | Asn | Ala | Leu | Trp | Gln | Ser | Ala | Tyr | Thr | Ala | Leu | Ala | Gly | Leu | |
| | | 630 | | | | 635 | | | | | | 640 | | | | | 645 | |
| 30 | | cac | tcc | ctc | tcc | tcc | tgg | gat | gaa | gag | aag | ggg | cat | gca | gct | tcc | cta | 2083 |
| | | His | Ser | Leu | Ser | Ser | Trp | Asp | Glu | Glu | Lys | Gly | His | Ala | Ala | Ser | Leu | |
| | | | | | | 650 | | | | | 655 | | | | | 660 | | |
| | | caa | ggc | att | ggg | ctt | ctg | gtt | cat | caa | aaa | gac | aaa | aac | ggg | ttt | aag | 2131 |
| | | Gln | Gly | Ile | Gly | Leu | Leu | Val | His | Gln | Lys | Asp | Lys | Asn | Gly | Phe | Lys | |
| | | | | | 665 | | | | | 670 | | | | | 675 | | | |
| 40 | | gga | ttt | cgt | agt | cat | atg | aca | ggg | tat | agt | gct | acc | acc | gaa | gca | acc | 2179 |
| | | Gly | Phe | Arg | Ser | His | Met | Thr | Gly | Tyr | Ser | Ala | Thr | Thr | Glu | Ala | Thr | |
| | | | | 680 | | | | 685 | | | | | | 690 | | | | |
| | | tct | tct | caa | agt | ccg | aat | ttc | tct | tta | gga | ttt | gct | cag | ttc | ttc | tcc | 2227 |
| | | Ser | Ser | Gln | Ser | Pro | Asn | Phe | Ser | Leu | Gly | Phe | Ala | Gln | Phe | Phe | Ser | |
| | | 695 | | | | | 700 | | | | | 705 | | | | | | |
| | | aaa | gct | aaa | gaa | cat | gaa | tct | caa | aat | agc | acg | tcc | tct | cac | cac | tat | 2275 |
| | | Lys | Ala | Lys | Glu | His | Glu | Ser | Gln | Asn | Ser | Thr | Ser | Ser | His | His | Tyr | |
| | | 710 | | | | | 715 | | | | | 720 | | | | | 725 | |
| 50 | | ttc | tct | gga | atg | tgc | ata | gca | aaa | tac | tct | ctt | caa | aga | gtg | ata | cgt | 2323 |
| | | Phe | Ser | Gly | Met | Cys | Ile | Ala | Lys | Tyr | Ser | Leu | Gln | Arg | Val | Ile | Arg | |
| | | | | | | 730 | | | | | 735 | | | | | 740 | | |
| | | cta | tct | gtg | tct | ctt | gct | tat | atg | ttt | acc | tcg | gaa | cat | acc | cat | aca | 2371 |
| | | Leu | Ser | Val | Ser | Leu | Ala | Tyr | Met | Phe | Thr | Ser | Glu | His | Thr | His | Thr | |
| | | | | | | 745 | | | | 750 | | | | | 755 | | | |
| 60 | | atg | tat | cag | ggg | ctc | ctg | gaa | ggg | aac | tct | cag | gga | tct | ttc | cac | aac | 2419 |
| | | Met | Tyr | Gln | Gly | Leu | Leu | Glu | Gly | Asn | Ser | Gln | Gly | Ser | Phe | His | Asn | |
| | | | | 760 | | | | 765 | | | | | | 770 | | | | |

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cat acc tta gca ggg gct ctc tcc tgt gtt ttc tta cct caa cct cac 2467
 His Thr Leu Ala Gly Ala Leu Ser Cys Val Phe Leu Pro Gln Pro His
 775 780 785

ggc gag tcc ctg cag atc tat ccc ttt att act gcc tta gcc atc cga 2515
 Gly Glu Ser Leu Gln Ile Tyr Pro Phe Ile Thr Ala Leu Ala Ile Arg
 790 795 800 805

10

 gga aat ctt gct gcg ttt caa gaa tct gga gac cat gct cgg gaa ttt 2563
 Gly Asn Leu Ala Ala Phe Gln Glu Ser Gly Asp His Ala Arg Glu Phe
 810 815 820

tcc cta cac cgc ccc cta acg gac gtc tcc ctc cct gta gga atc cgc 2611
 Ser Leu His Arg Pro Leu Thr Asp Val Ser Leu Pro Val Gly Ile Arg
 825 830 835

20

 gct tct tgg aag aac cac cac cga gtt ccc cta gtc tgg ctc aca gaa 2659
 Ala Ser Trp Lys Asn His His Arg Val Pro Leu Val Trp Leu Thr Glu
 840 845 850

att tcc tat cgc tct act ctc tat agg caa gat cct gaa ctc cac tcg 2707
 Ile Ser Tyr Arg Ser Thr Leu Tyr Arg Gln Asp Pro Glu Leu His Ser
 855 860 865

aaa tta ctg att agc caa ggt acg tgg acg acg cag gcc act cct gtg 2755
 Lys Leu Leu Ile Ser Gln Gly Thr Trp Thr Thr Gln Ala Thr Pro Val
 870 875 880 885

30

 acc tac aat gct tta ggg atc aaa gtg aaa aat acc atg cag gtg ttt 2803
 Thr Tyr Asn Ala Leu Gly Ile Lys Val Lys Asn Thr Met Gln Val Phe
 890 895 900

cct aaa gtc act ctc tcc tta gat tac tct gcg gat att tct tcc tcc 2851
 Pro Lys Val Thr Leu Ser Leu Asp Tyr Ser Ala Asp Ile Ser Ser Ser
 905 910 915

acg ctg agt cac tac tta aac gtg gcg agt aga atg aga ttt 2893
 Thr Leu Ser His Tyr Leu Asn Val Ala Ser Arg Met Arg Phe
 920 925 930

taacaataag tgaccaaaac agaaagatta aggaacctct agtgtcaaag actcctccta 2953
 agtttttatt ctatctcggg aatttcacag cctgcatgtt cgggatg 3000

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<211> 9

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50 <213> Chlamydia pneumoniae

<220>

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<222> (1)..(9)

<400> 24

Met Leu Leu Pro Phe Thr Phe Val Leu

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60

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<210> 25
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 <213> Chlamydia pneumoniae

<220>

<221> CDS

10 <222> (100)..(3033)

<400> 25

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attacgattt taaaccttat ttaacgacag ggttgaggc atg cct ctt tct ttc 114
 Met Pro Leu Ser Phe
 1 5

20 aaa tct tca tct ttt tgt cta ctt gcc tgt tta tgt agt gca agt tgc 162
 Lys Ser Ser Ser Phe Cys Leu Leu Ala Cys Leu Cys Ser Ala Ser Cys
 10 15 20

gcg ttt gct gag act aga ctc gga ggg aac ttt gtt cct cca att acg 210
 Ala Phe Ala Glu Thr Arg Leu Gly Gly Asn Phe Val Pro Pro Ile Thr
 25 30 35

30 aat cag ggt gaa gag atc tta ctc act tca gat ttt gtt tgt tca aac 258
 Asn Gln Gly Glu Glu Ile Leu Leu Thr Ser Asp Phe Val Cys Ser Asn
 40 45 50

ttc ttg ggg gcg agt ttt tca agt tcc ttt atc aat agt tcc agc aat 306
 Phe Leu Gly Ala Ser Phe Ser Ser Ser Phe Ile Asn Ser Ser Ser Asn
 55 60 65

ctc tcc tta tta ggg aag ggc ctt tcc tta acg ttt acc tct tgt caa 354
 Leu Ser Leu Leu Gly Lys Gly Leu Ser Leu Thr Phe Thr Ser Cys Gln
 70 75 80 85

40 gct cct aca aat agt aac tat gcg cta ctt tct gcc gca gag act ctg 402
 Ala Pro Thr Asn Ser Asn Tyr Ala Leu Leu Ser Ala Ala Glu Thr Leu
 90 95 100

acc ttc aag aat ttt tct tct ata aac ttt aca ggg aac caa tcg aca 450
 Thr Phe Lys Asn Phe Ser Ser Ile Asn Phe Thr Gly Asn Gln Ser Thr
 105 110 115

50 gga ctt ggc ggc ctc atc tac gga aaa gat att gtt ttc caa tct atc 498
 Gly Leu Gly Gly Leu Ile Tyr Gly Lys Asp Ile Val Phe Gln Ser Ile
 120 125 130

aaa gat ttg atc ttc act acg aac cgt gtt gcc tat tct cca gca tct 546
 Lys Asp Leu Ile Phe Thr Thr Asn Arg Val Ala Tyr Ser Pro Ala Ser
 135 140 145

gta act acg tcg gca act ccc gca atc act aca gta act aca gga gcc 594
 Val Thr Thr Ser Ala Thr Pro Ala Ile Thr Thr Val Thr Thr Gly Ala
 150 155 160 165

60 tct gct ctc caa cct aca gac tca ctc act gtc gaa aac ata tcc caa 642
 Ser Ala Leu Gln Pro Thr Asp Ser Leu Thr Val Glu Asn Ile Ser Gln
 170 175 180

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| | tcg | atc | aag | ttt | ttt | ggg | aac | ctt | gcc | aac | ttc | ggc | tct | gca | att | agc | 690 |
| | Ser | Ile | Lys | Phe | Phe | Gly | Asn | Leu | Ala | Asn | Phe | Gly | Ser | Ala | Ile | Ser | |
| | | | | 185 | | | | | 190 | | | | | 195 | | | |
| | agt | tct | ccc | acg | gca | gtc | gtt | aaa | ttc | atc | aat | aac | acc | gct | acc | atg | 738 |
| | Ser | Ser | Pro | Thr | Ala | Val | Val | Lys | Phe | Ile | Asn | Asn | Thr | Ala | Thr | Met | |
| | | | 200 | | | | | 205 | | | | | 210 | | | | |
| 10 | agc | ttc | tcc | cat | aac | ttt | act | tcg | tca | gga | ggc | ggc | gtg | att | tat | gga | 786 |
| | Ser | Phe | Ser | His | Asn | Phe | Thr | Ser | Ser | Gly | Gly | Gly | Val | Ile | Tyr | Gly | |
| | | 215 | | | | | 220 | | | | | 225 | | | | | |
| | gga | agc | tct | ctc | ctt | ttt | gaa | aac | aat | tct | gga | tgc | atc | atc | ttc | acc | 834 |
| | Gly | Ser | Ser | Leu | Leu | Phe | Glu | Asn | Asn | Ser | Gly | Cys | Ile | Ile | Phe | Thr | |
| | 230 | | | | | 235 | | | | | 240 | | | | | 245 | |
| 20 | gcc | aac | tcc | tgt | gtg | aac | agc | tta | aaa | ggc | gtc | acc | cct | tca | tca | gga | 882 |
| | Ala | Asn | Ser | Cys | Val | Asn | Ser | Leu | Lys | Gly | Val | Thr | Pro | Ser | Ser | Gly | |
| | | | | | 250 | | | | | 255 | | | | | 260 | | |
| | acc | tat | gct | tta | gga | agt | ggc | gga | gcc | atc | tgc | atc | cct | acg | gga | act | 930 |
| | Thr | Tyr | Ala | Leu | Gly | Ser | Gly | Gly | Ala | Ile | Cys | Ile | Pro | Thr | Gly | Thr | |
| | | | | 265 | | | | | 270 | | | | | 275 | | | |
| | ttc | gaa | tta | aaa | aac | aat | cag | ggg | aag | tgc | acc | ttc | tct | tat | aat | ggt | 978 |
| | Phe | Glu | Leu | Lys | Asn | Asn | Gln | Gly | Lys | Cys | Thr | Phe | Ser | Tyr | Asn | Gly | |
| | | | 280 | | | | | 285 | | | | | 290 | | | | |
| 30 | aca | cca | aat | gat | gcg | ggt | gcg | atc | tac | gcc | gaa | acc | tgc | aac | atc | gta | 1026 |
| | Thr | Pro | Asn | Asp | Ala | Gly | Ala | Ile | Tyr | Ala | Glu | Thr | Cys | Asn | Ile | Val | |
| | | 295 | | | | 300 | | | | | | 305 | | | | | |
| | ggg | aac | cag | ggt | gcc | ttg | ctc | cta | gat | agc | aac | act | gca | gcg | aga | aat | 1074 |
| | Gly | Asn | Gln | Gly | Ala | Leu | Leu | Leu | Asp | Ser | Asn | Thr | Ala | Ala | Arg | Asn | |
| | 310 | | | | | 315 | | | | | 320 | | | | | 325 | |
| 40 | ggc | gga | gcc | atc | tgt | gct | aaa | gtg | ctc | aat | att | caa | gga | cgc | ggt | cct | 1122 |
| | Gly | Gly | Ala | Ile | Cys | Ala | Lys | Val | Leu | Asn | Ile | Gln | Gly | Arg | Gly | Pro | |
| | | | | | 330 | | | | | 335 | | | | | 340 | | |
| | att | gaa | ttc | tct | aga | aac | cgc | gcg | gag | aag | ggt | gga | gct | att | ttc | ata | 1170 |
| | Ile | Glu | Phe | Ser | Arg | Asn | Arg | Ala | Glu | Lys | Gly | Gly | Ala | Ile | Phe | Ile | |
| | | | | 345 | | | | | 350 | | | | | 355 | | | |
| | ggc | ccc | tct | gtt | gga | gac | cct | gcg | aag | caa | aca | tcg | aca | ctt | acg | att | 1218 |
| | Gly | Pro | Ser | Val | Gly | Asp | Pro | Ala | Lys | Gln | Thr | Ser | Thr | Leu | Thr | Ile | |
| | | | 360 | | | | | 365 | | | | | 370 | | | | |
| 50 | ttg | gct | tcc | gaa | ggt | gat | att | gcg | ttc | caa | gga | aac | atg | ctc | aat | aca | 1266 |
| | Leu | Ala | Ser | Glu | Gly | Asp | Ile | Ala | Phe | Gln | Gly | Asn | Met | Leu | Asn | Thr | |
| | | 375 | | | | | 380 | | | | | 385 | | | | | |
| | aaa | cct | gga | atc | cgc | aat | gcc | atc | act | gta | gaa | gca | ggg | gga | gag | att | 1314 |
| | Lys | Pro | Gly | Ile | Arg | Asn | Ala | Ile | Thr | Val | Glu | Ala | Gly | Gly | Glu | Ile | |
| | 390 | | | | | 395 | | | | | 400 | | | | | 405 | |
| 60 | gtg | tct | cta | tct | gca | caa | gga | ggc | tca | cgt | ctt | gta | ttt | tat | gat | ccc | 1362 |
| | Val | Ser | Leu | Ser | Ala | Gln | Gly | Gly | Ser | Arg | Leu | Val | Phe | Tyr | Asp | Pro | |
| | | | | | 410 | | | | | 415 | | | | | 420 | | |

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| | att | aca | cat | agc | ctc | cca | acc | aca | agt | ccg | tct | aat | aaa | gac | att | aca | 1410 |
| | Ile | Thr | His | Ser | Leu | Pro | Thr | Thr | Ser | Pro | Ser | Asn | Lys | Asp | Ile | Thr | |
| | | | | 425 | | | | | 430 | | | | | 435 | | | |
| | atc | aac | gct | aat | ggc | gct | tca | gga | tct | gta | gtc | ttt | aca | agt | aag | gga | 1458 |
| | Ile | Asn | Ala | Asn | Gly | Ala | Ser | Gly | Ser | Val | Val | Phe | Thr | Ser | Lys | Gly | |
| | | | 440 | | | | | 445 | | | | | 450 | | | | |
| 10 | ctc | tcc | tct | aca | gaa | ctc | ctg | ttg | cct | gcc | aac | acg | aca | act | ata | ctt | 1506 |
| | Leu | Ser | Ser | Thr | Glu | Leu | Leu | Leu | Pro | Ala | Asn | Thr | Thr | Thr | Ile | Leu | |
| | | | 455 | | | | 460 | | | | | | 465 | | | | |
| | cta | gga | aca | gtc | aag | atc | gct | agt | gga | gaa | ctg | aag | att | act | gac | aat | 1554 |
| | Leu | Gly | Thr | Val | Lys | Ile | Ala | Ser | Gly | Glu | Leu | Lys | Ile | Thr | Asp | Asn | |
| | | | | | | 475 | | | | | 480 | | | | | 485 | |
| 20 | gcg | gtt | gtc | aat | gtt | gct | ggc | ttc | gct | act | cag | ggc | tca | ggg | cag | ctt | 1602 |
| | Ala | Val | Val | Asn | Val | Ala | Gly | Phe | Ala | Thr | Gln | Gly | Ser | Gly | Gln | Leu | |
| | | | | | 490 | | | | | 495 | | | | | 500 | | |
| | acc | ctg | ggc | tct | gga | gga | acc | tta | ggg | ctg | gca | aca | ccc | acg | gga | gca | 1650 |
| | Thr | Leu | Gly | Ser | Gly | Gly | Thr | Leu | Gly | Leu | Ala | Thr | Pro | Thr | Gly | Ala | |
| | | | | 505 | | | | | 510 | | | | | 515 | | | |
| | cct | gcc | gct | gta | gac | ttt | acg | att | gga | aag | tta | gca | ttc | gat | cct | ttt | 1698 |
| | Pro | Ala | Ala | Val | Asp | Phe | Thr | Ile | Gly | Lys | Leu | Ala | Phe | Asp | Pro | Phe | |
| | | | | 520 | | | | 525 | | | | | 530 | | | | |
| 30 | tcc | ttc | cta | aaa | aga | gat | ttt | gtt | tca | gca | tca | gta | aat | gca | ggc | aca | 1746 |
| | Ser | Phe | Leu | Lys | Arg | Asp | Phe | Val | Ser | Ala | Ser | Val | Asn | Ala | Gly | Thr | |
| | | | | 535 | | | 540 | | | | | 545 | | | | | |
| | aaa | aac | gtc | act | tta | aca | gga | gct | ctg | gtt | ctt | gat | gaa | cat | gac | gtt | 1794 |
| | Lys | Asn | Val | Thr | Leu | Thr | Gly | Ala | Leu | Val | Leu | Asp | Glu | His | Asp | Val | |
| | | | | | | 555 | | | | | 560 | | | | | 565 | |
| 40 | aca | gat | ctt | tat | gat | atg | gtg | tca | tta | caa | tct | cca | gta | gca | att | cct | 1842 |
| | Thr | Asp | Leu | Tyr | Asp | Met | Val | Ser | Leu | Gln | Ser | Pro | Val | Ala | Ile | Pro | |
| | | | | | 570 | | | | | 575 | | | | | 580 | | |
| | atc | gct | gtt | ttc | aaa | gga | gca | acc | gtt | act | aag | aca | gga | ttt | cct | gat | 1890 |
| | Ile | Ala | Val | Phe | Lys | Gly | Ala | Thr | Val | Thr | Lys | Thr | Gly | Phe | Pro | Asp | |
| | | | | 585 | | | | | 590 | | | | | 595 | | | |
| | ggg | gag | att | gcg | act | cca | agc | cac | tac | ggc | tac | caa | gga | aag | tgg | tcc | 1938 |
| | Gly | Glu | Ile | Ala | Thr | Pro | Ser | His | Tyr | Gly | Tyr | Gln | Gly | Lys | Trp | Ser | |
| | | | | 600 | | | | 605 | | | | | 610 | | | | |
| 50 | tac | aca | tgg | tcc | cgt | ccc | ctg | tta | att | cca | gct | cct | gat | gga | gga | ttt | 1986 |
| | Tyr | Thr | Trp | Ser | Arg | Pro | Leu | Leu | Ile | Pro | Ala | Pro | Asp | Gly | Gly | Phe | |
| | | | | 615 | | | 620 | | | | | 625 | | | | | |
| | cct | gga | ggt | ccc | tct | cct | agc | gca | aat | act | ctc | tat | gct | gta | tgg | aat | 2034 |
| | Pro | Gly | Gly | Pro | Ser | Pro | Ser | Ala | Asn | Thr | Leu | Tyr | Ala | Val | Trp | Asn | |
| | | | | | | 635 | | | | | 640 | | | | | 645 | |
| 60 | tca | gac | act | ctc | gtg | cgt | tct | acc | tat | atc | tta | gat | ccc | gag | cgt | tac | 2082 |
| | Ser | Asp | Thr | Leu | Val | Arg | Ser | Thr | Tyr | Ile | Leu | Asp | Pro | Glu | Arg | Tyr | |
| | | | | | 650 | | | | | 655 | | | | | 660 | | |

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| | | |
|----|---|------|
| | gga gaa att gtc agc aac agc tta tgg att tcc ttc tta gga aat cag | 2130 |
| | Gly Glu Ile Val Ser Asn Ser Leu Trp Ile Ser Phe Leu Gly Asn Gln | |
| | 665 670 675 | |
| | gca ttc tct gat att ctc caa gat gtt ctt ttg ata gat cat ccc ggg | 2178 |
| | Ala Phe Ser Asp Ile Leu Gln Asp Val Leu Leu Ile Asp His Pro Gly | |
| | 680 685 690 | |
| 10 | ttg tcc ata acc gcg aaa gct tta gga gcc tat gtc gaa cac aca cca | 2226 |
| | Leu Ser Ile Thr Ala Lys Ala Leu Gly Ala Tyr Val Glu His Thr Pro | |
| | 695 700 705 | |
| | aga caa gga cat gag ggc ttt tca ggt cgc tat gga ggc tac caa gct | 2274 |
| | Arg Gln Gly His Glu Gly Phe Ser Gly Arg Tyr Gly Gly Tyr Gln Ala | |
| | 710 715 720 725 | |
| 20 | gcg cta tct atg aac tac acg gac cac act acg tta gga ctt tct ttc | 2322 |
| | Ala Leu Ser Met Asn Tyr Thr Asp His Thr Thr Leu Gly Leu Ser Phe | |
| | 730 735 740 | |
| | ggg cag ctt tat gga aaa act aac gcc aac ccc tac gat tca cgt tgc | 2370 |
| | Gly Gln Leu Tyr Gly Lys Thr Asn Ala Asn Pro Tyr Asp Ser Arg Cys | |
| | 745 750 755 | |
| | tca gaa caa atg tat tta ctc tcg ttc ttt ggt caa ttc cct atc gtg | 2418 |
| | Ser Glu Gln Met Tyr Leu Leu Ser Phe Phe Gly Gln Phe Pro Ile Val | |
| | 760 765 770 | |
| 30 | act caa aag agc gag gcc tta att tcc tgg aaa gca gct tat ggt tat | 2466 |
| | Thr Gln Lys Ser Glu Ala Leu Ile Ser Trp Lys Ala Ala Tyr Gly Tyr | |
| | 775 780 785 | |
| | tcc aaa aat cac cta aat acc acc tac ctc aga cct gac aaa gct cca | 2514 |
| | Ser Lys Asn His Leu Asn Thr Thr Tyr Leu Arg Pro Asp Lys Ala Pro | |
| | 790 795 800 805 | |
| 40 | aaa tct caa ggg caa tgg cat aac aat agt tac tat gtt ctt att tct | 2562 |
| | Lys Ser Gln Gly Gln Trp His Asn Asn Ser Tyr Tyr Val Leu Ile Ser | |
| | 810 815 820 | |
| | gca gaa cat cct ttc cta aac tgg tgt ctt ctt aca aga cct ctg gct | 2610 |
| | Ala Glu His Pro Phe Leu Asn Trp Cys Leu Leu Thr Arg Pro Leu Ala | |
| | 825 830 835 | |
| | caa gct tgg gat ctt tca ggt ttt att tcc gca gaa ttc cta ggt ggt | 2658 |
| | Gln Ala Trp Asp Leu Ser Gly Phe Ile Ser Ala Glu Phe Leu Gly Gly | |
| | 840 845 850 | |
| 50 | tgg caa agt aag ttc aca gaa act gga gat ctg caa cgt agc ttt agt | 2706 |
| | Trp Gln Ser Lys Phe Thr Glu Thr Gly Asp Leu Gln Arg Ser Phe Ser | |
| | 855 860 865 | |
| | aga ggt aaa ggg tac aat gtt tcc cta ccg ata gga tgt tct tct caa | 2754 |
| | Arg Gly Lys Gly Tyr Asn Val Ser Leu Pro Ile Gly Cys Ser Ser Gln | |
| | 870 875 880 885 | |
| 60 | tgg ttc aca cca ttt aag aag gct cct tct aca ctg acc atc aaa ctt | 2802 |
| | Trp Phe Thr Pro Phe Lys Lys Ala Pro Ser Thr Leu Thr Ile Lys Leu | |
| | 890 895 900 | |

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gcc tac aag cct gat atc tat cgt gtc aac cct cac aat att gtg act 2850
Ala Tyr Lys Pro Asp Ile Tyr Arg Val Asn Pro His Asn Ile Val Thr
          905                      910                      915

gtc gtc tca aac caa gag agc act tcg atc tca gga gca aat cta cgc 2898
Val Val Ser Asn Gln Glu Ser Thr Ser Ile Ser Gly Ala Asn Leu Arg
          920                      925                      930

10  cgc cac ggt ttg ttt gta caa atc cat gat gta gta gat ctc acc gag 2946
Arg His Gly Leu Phe Val Gln Ile His Asp Val Val Asp Leu Thr Glu
          935                      940                      945

gac act cag gcc ttt cta aac tat acc ttt gac ggg aaa aat gga ttt 2994
Asp Thr Gln Ala Phe Leu Asn Tyr Thr Phe Asp Gly Lys Asn Gly Phe
950                      955                      960                      965

20  aca aac cac cga gtg tct aca gga cta aaa tcc aca ttt taaaactcta 3043
Thr Asn His Arg Val Ser Thr Gly Leu Lys Ser Thr Phe
          970                      975

agctctgctt agagttttct gtagccccgg tcgtcttaga atcctctatc catcatcgaa 3103
gaacttagca atgaaggcca agattctcac tctatgagaa cccccc 3150

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<211> 9
<212> PRT
30  <213> Chlamydia pneumoniae

<220>
<221> SITE
<222> (936)..(944)

<400> 26
Gly Leu Phe Val Gln Ile His Asp Val
 1                      5

40  <210> 27
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<212> PRT
<213> Chlamydia pneumoniae

<400> 27
Met Lys Ile Pro Leu Arg Phe Leu Leu Ile Ser Leu Val Pro Thr Leu
 1                      5                      10                      15

50  Ser Met Ser Asn Leu Leu Gly Ala Ala Thr Thr Glu Glu Leu Ser Ala
          20                      25                      30

Ser Asn Ser Phe Asp Gly Thr Thr Ser Thr Thr Ser Phe Ser Ser Lys
          35                      40                      45

Thr Ser Ser Ala Thr Asp Gly Thr Asn Tyr Val Phe Lys Asp Ser Val
          50                      55                      60

60  Val Ile Glu Asn Val Pro Lys Thr Gly Glu Thr Gln Ser Thr Ser Cys
          65                      70                      75                      80

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | Phe | Lys | Asn | Asp | Ala | Ala | Ala | Gly | Asp | Leu | Asn | Phe | Leu | Gly | Gly | Gly | |
| | | | | | 85 | | | | | 90 | | | | | 95 | | |
| | Phe | Ser | Phe | Thr | Phe | Ser | Asn | Ile | Asp | Ala | Thr | Thr | Ala | Ser | Gly | Ala | |
| | | | | 100 | | | | | 105 | | | | | 110 | | | |
| | Ala | Ile | Gly | Ser | Glu | Ala | Ala | Asn | Lys | Thr | Val | Thr | Leu | Ser | Gly | Phe | |
| | | | 115 | | | | | 120 | | | | | 125 | | | | |
| 10 | Ser | Ala | Leu | Ser | Phe | Leu | Lys | Ser | Pro | Ala | Ser | Thr | Val | Thr | Asn | Gly | |
| | | 130 | | | | | 135 | | | | | 140 | | | | | |
| | Leu | Gly | Ala | Ile | Asn | Val | Lys | Gly | Asn | Leu | Ser | Leu | Leu | Asp | Asn | Asp | |
| | 145 | | | | | 150 | | | | | 155 | | | | 160 | | |
| | Lys | Val | Leu | Ile | Gln | Asp | Asn | Phe | Ser | Thr | Gly | Asp | Gly | Gly | Ala | Ile | |
| | | | | 165 | | | | | | 170 | | | | | 175 | | |
| 20 | Asn | Cys | Ala | Gly | Ser | Leu | Lys | Ile | Ala | Asn | Asn | Lys | Ser | Leu | Ser | Phe | |
| | | | 180 | | | | | | 185 | | | | | 190 | | | |
| | Ile | Gly | Asn | Ser | Ser | Ser | Thr | Arg | Gly | Gly | Ala | Ile | His | Thr | Lys | Asn | |
| | | 195 | | | | | | 200 | | | | | 205 | | | | |
| | Leu | Thr | Leu | Ser | Ser | Gly | Gly | Glu | Thr | Leu | Phe | Gln | Gly | Asn | Thr | Ala | |
| | 210 | | | | | | 215 | | | | | 220 | | | | | |
| 30 | Pro | Thr | Ala | Ala | Gly | Lys | Gly | Gly | Ala | Ile | Ala | Ile | Ala | Asp | Ser | Gly | |
| | 225 | | | | | 230 | | | | | 235 | | | | | 240 | |
| | Thr | Leu | Ser | Ile | Ser | Gly | Asp | Ser | Gly | Asp | Ile | Ile | Phe | Glu | Gly | Asn | |
| | | | | 245 | | | | | | 250 | | | | | 255 | | |
| | Thr | Ile | Gly | Ala | Thr | Gly | Thr | Val | Ser | His | Ser | Ala | Ile | Asp | Leu | Gly | |
| | | | 260 | | | | | | 265 | | | | | 270 | | | |
| | Thr | Ser | Ala | Lys | Ile | Thr | Ala | Leu | Arg | Ala | Ala | Gln | Gly | His | Thr | Ile | |
| | | | 275 | | | | | 280 | | | | | 285 | | | | |
| 40 | Tyr | Phe | Tyr | Asp | Pro | Ile | Thr | Val | Thr | Gly | Ser | Thr | Ser | Val | Ala | Asp | |
| | 290 | | | | | 295 | | | | | | 300 | | | | | |
| | Ala | Leu | Asn | Ile | Asn | Ser | Pro | Asp | Thr | Gly | Asp | Asn | Lys | Glu | Tyr | Thr | |
| | 305 | | | | | 310 | | | | | 315 | | | | 320 | | |
| | Gly | Thr | Ile | Val | Phe | Ser | Gly | Glu | Lys | Leu | Thr | Glu | Ala | Glu | Ala | Lys | |
| | | | | 325 | | | | | | 330 | | | | | 335 | | |
| 50 | Asp | Glu | Lys | Asn | Arg | Thr | Ser | Lys | Leu | Leu | Gln | Asn | Val | Ala | Phe | Lys | |
| | | | | 340 | | | | | 345 | | | | | 350 | | | |
| | Asn | Gly | Thr | Val | Val | Leu | Lys | Gly | Asp | Val | Val | Leu | Ser | Ala | Asn | Gly | |
| | | | 355 | | | | | 360 | | | | | 365 | | | | |
| | Phe | Ser | Gln | Asp | Ala | Asn | Ser | Lys | Leu | Ile | Met | Asp | Leu | Gly | Thr | Ser | |
| | | 370 | | | | | 375 | | | | | 380 | | | | | |
| 60 | Leu | Val | Ala | Asn | Thr | Glu | Ser | Ile | Glu | Leu | Thr | Asn | Leu | Glu | Ile | Asn | |
| | 385 | | | | 390 | | | | | | 395 | | | | | 400 | |

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| | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | Ile | Asp | Ser | Leu | Arg | Asn | Gly | Lys | Lys | Ile | Lys | Leu | Ser | Ala | Ala | Thr |
| | | | | | 405 | | | | | 410 | | | | | 415 | |
| | Ala | Gln | Lys | Asp | Ile | Arg | Ile | Asp | Arg | Pro | Val | Val | Leu | Ala | Ile | Ser |
| | | | | 420 | | | | | 425 | | | | | 430 | | |
| 10 | Asp | Glu | Ser | Phe | Tyr | Gln | Asn | Gly | Phe | Leu | Asn | Glu | Asp | His | Ser | Tyr |
| | | | 435 | | | | | 440 | | | | | 445 | | | |
| | Asp | Gly | Ile | Leu | Glu | Leu | Asp | Ala | Gly | Lys | Asp | Ile | Val | Ile | Ser | Ala |
| | | 450 | | | | | 455 | | | | | 460 | | | | |
| | Asp | Ser | Arg | Ser | Ile | Asp | Ala | Val | Gln | Ser | Pro | Tyr | Gly | Tyr | Gln | Gly |
| | 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| | Lys | Trp | Thr | Ile | Asn | Trp | Ser | Thr | Asp | Asp | Lys | Lys | Ala | Thr | Val | Ser |
| | | | | | 485 | | | | | 490 | | | | | 495 | |
| 20 | Trp | Ala | Lys | Gln | Ser | Phe | Asn | Pro | Thr | Ala | Glu | Gln | Glu | Ala | Pro | Leu |
| | | | | 500 | | | | | 505 | | | | | 510 | | |
| | Val | Pro | Asn | Leu | Leu | Trp | Gly | Ser | Phe | Ile | Asp | Val | Arg | Ser | Phe | Gln |
| | | | 515 | | | | | 520 | | | | | 525 | | | |
| | Asn | Phe | Ile | Glu | Leu | Gly | Thr | Glu | Gly | Ala | Pro | Tyr | Glu | Lys | Arg | Phe |
| | | 530 | | | | | 535 | | | | | 540 | | | | |
| 30 | Trp | Val | Ala | Gly | Ile | Ser | Asn | Val | Leu | His | Arg | Ser | Gly | Arg | Glu | Asn |
| | 545 | | | | | 550 | | | | | 555 | | | | | 560 |
| | Gln | Arg | Lys | Phe | Arg | His | Val | Ser | Gly | Gly | Ala | Val | Val | Gly | Ala | Ser |
| | | | | 565 | | | | | | 570 | | | | | 575 | |
| | Thr | Arg | Met | Pro | Gly | Gly | Asp | Thr | Leu | Ser | Leu | Gly | Phe | Ala | Gln | Leu |
| | | | | 580 | | | | | 585 | | | | | 590 | | |
| | Phe | Ala | Arg | Asp | Lys | Asp | Tyr | Phe | Met | Asn | Thr | Asn | Phe | Ala | Lys | Thr |
| 40 | | | 595 | | | | | 600 | | | | | 605 | | | |
| | Tyr | Ala | Gly | Ser | Leu | Arg | Leu | Gln | His | Asp | Ala | Ser | Leu | Tyr | Ser | Val |
| | | 610 | | | | | 615 | | | | | 620 | | | | |
| | Val | Ser | Ile | Leu | Leu | Gly | Glu | Gly | Gly | Leu | Arg | Glu | Ile | Leu | Leu | Pro |
| | 625 | | | | | 630 | | | | | 635 | | | | | 640 |
| | Tyr | Val | Ser | Lys | Thr | Leu | Pro | Cys | Ser | Phe | Tyr | Gly | Gln | Leu | Ser | Tyr |
| | | | | 645 | | | | | | 650 | | | | 655 | | |
| 50 | Gly | His | Thr | Asp | His | Arg | Met | Lys | Thr | Glu | Ser | Leu | Pro | Pro | Pro | Pro |
| | | | | 660 | | | | | 665 | | | | | 670 | | |
| | Pro | Thr | Leu | Ser | Thr | Asp | His | Thr | Ser | Trp | Gly | Gly | Tyr | Val | Trp | Ala |
| | | | | 675 | | | | 680 | | | | | 685 | | | |
| | Gly | Glu | Leu | Gly | Thr | Arg | Val | Ala | Val | Glu | Asn | Thr | Ser | Gly | Arg | Gly |
| | | 690 | | | | | 695 | | | | | 700 | | | | |
| 60 | Phe | Phe | Gln | Glu | Tyr | Thr | Pro | Phe | Val | Lys | Val | Gln | Ala | Val | Tyr | Ala |
| | 705 | | | | | 710 | | | | | 715 | | | | | 720 |

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Arg Gln Asp Ser Phe Val Glu Leu Gly Ala Ile Ser Arg Asp Phe Ser
 725 730 735
 Asp Ser His Leu Tyr Asn Leu Ala Ile Pro Leu Gly Ile Lys Leu Glu
 740 745 750
 10 Lys Arg Phe Ala Glu Gln Tyr Tyr His Val Val Ala Met Tyr Ser Pro
 755 760 765
 Asp Val Cys Arg Ser Asn Pro Lys Cys Thr Thr Thr Leu Leu Ser Asn
 770 775 780
 Gln Gly Ser Trp Lys Thr Lys Gly Ser Asn Leu Ala Arg Gln Ala Gly
 785 790 795 800
 Ile Val Gln Ala Ser Gly Phe Arg Ser Leu Gly Ala Ala Ala Glu Leu
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 20 Phe Gly Asn Phe Gly Phe Glu Trp Arg Gly Ser Ser Arg Ser Tyr Asn
 820 825 830
 Val Asp Ala Gly Ser Lys Ile Lys Phe
 835 840
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 40 Ser Asn Ser Phe Asp Gly Thr Thr Ser Thr Thr Ser Phe Ser Ser Lys
 35 40 45
 Thr Ser Ser Ala Thr Asp Gly Thr Asn Tyr Val Phe Lys Asp Ser Val
 50 55 60
 Val Ile Glu Asn Val Pro Lys Thr Gly Glu Thr Gln Ser Thr Ser Cys
 65 70 75 80
 50 Phe Lys Asn Asp Ala Ala Ala Gly Asp Leu Asn Phe Leu Gly Gly Gly
 85 90 95
 Phe Ser Phe Thr Phe Ser Asn Ile Asp Ala Thr Thr Ala Ser Gly Ala
 100 105 110
 Ala Ile Gly Ser Glu Ala Ala Asn Lys Thr Val Thr Leu Ser Gly Phe
 115 120 125
 Ser Ala Leu Ser Phe Leu Lys Ser Pro Ala Ser Thr Val Thr Asn Gly
 130 135 140
 60

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | Leu | Gly | Ala | Ile | Asn | Val | Lys | Gly | Asn | Leu | Ser | Leu | Leu | Asp | Asn | Asp | |
| | 145 | | | | | 150 | | | | | 155 | | | | | 160 | |
| | Lys | Val | Leu | Ile | Gln | Asp | Asn | Phe | Ser | Thr | Gly | Asp | Gly | Gly | Ala | Ile | |
| | | | | | 165 | | | | | 170 | | | | | 175 | | |
| 10 | Asn | Cys | Ala | Gly | Ser | Leu | Lys | Ile | Ala | Asn | Asn | Lys | Ser | Leu | Ser | Phe | |
| | | | | 180 | | | | | 185 | | | | | 190 | | | |
| | Ile | Gly | Asn | Ser | Ser | Ser | Thr | Arg | Gly | Gly | Ala | Ile | His | Thr | Lys | Asn | |
| | | | 195 | | | | | 200 | | | | | 205 | | | | |
| | Leu | Thr | Leu | Ser | Ser | Gly | Gly | Glu | Thr | Leu | Phe | Gln | Gly | Asn | Thr | Ala | |
| | 210 | | | | | | 215 | | | | | 220 | | | | | |
| | Pro | Thr | Ala | Ala | Gly | Lys | Gly | Gly | Ala | Ile | Ala | Ile | Ala | Asp | Ser | Gly | |
| | 225 | | | | | 230 | | | | | 235 | | | | | 240 | |
| 20 | Thr | Leu | Ser | Ile | Ser | Gly | Asp | Ser | Gly | Asp | Ile | Ile | Phe | Glu | Gly | Asn | |
| | | | | | 245 | | | | | 250 | | | | | 255 | | |
| | Thr | Ile | Gly | Ala | Thr | Gly | Thr | Val | Ser | His | Ser | Ala | Ile | Asp | Leu | Gly | |
| | | | | 260 | | | | | 265 | | | | | 270 | | | |
| | Thr | Ser | Ala | Lys | Ile | Thr | Ala | Leu | Arg | Ala | Ala | Gln | Gly | His | Thr | Ile | |
| | | | 275 | | | | | 280 | | | | | 285 | | | | |
| 30 | Tyr | Phe | Tyr | Asp | Pro | Ile | Thr | Val | Thr | Gly | Ser | Thr | Ser | Val | Ala | Asp | |
| | 290 | | | | | | 295 | | | | | 300 | | | | | |
| | Ala | Leu | Asn | Ile | Asn | Ser | Pro | Asp | Thr | Gly | Asp | Asn | Lys | Glu | Tyr | Thr | |
| | 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| | Gly | Thr | Ile | Val | Phe | Ser | Gly | Glu | Lys | Leu | Thr | Glu | Ala | Glu | Ala | Lys | |
| | | | | | 325 | | | | | 330 | | | | | 335 | | |
| 40 | Asp | Glu | Lys | Asn | Arg | Thr | Ser | Lys | Leu | Leu | Gln | Asn | Val | Ala | Phe | Lys | |
| | | | | 340 | | | | | 345 | | | | | 350 | | | |
| | Asn | Gly | Thr | Val | Val | Leu | Lys | Gly | Asp | Val | Val | Leu | Ser | Ala | Asn | Gly | |
| | | | 355 | | | | | 360 | | | | | 365 | | | | |
| | Phe | Ser | Gln | Asp | Ala | Asn | Ser | Lys | Leu | Ile | Met | Asp | Leu | Gly | Thr | Ser | |
| | 370 | | | | | | 375 | | | | | 380 | | | | | |
| | Leu | Val | Ala | Asn | Thr | Glu | Ser | Ile | Glu | Leu | Thr | Asn | Leu | Glu | Ile | Asn | |
| | 385 | | | | 390 | | | | | | 395 | | | | | 400 | |
| 50 | Ile | Asp | Ser | Leu | Arg | Asn | Gly | Lys | Lys | Ile | Lys | Leu | Ser | Ala | Ala | Thr | |
| | | | | | 405 | | | | | 410 | | | | | 415 | | |
| | Ala | Gln | Lys | Asp | Ile | Arg | Ile | Asp | Arg | Pro | Val | Val | Leu | Ala | Ile | Ser | |
| | | | | 420 | | | | 425 | | | | | | 430 | | | |
| | Asp | Glu | Ser | Phe | Tyr | Gln | Asn | Gly | Phe | Leu | Asn | Glu | Asp | His | Ser | Tyr | |
| | | | 435 | | | | | 440 | | | | | 445 | | | | |
| 60 | Asp | Gly | Ile | Leu | Glu | Leu | Asp | Ala | Gly | Lys | Asp | Ile | Val | Ile | Ser | Ala | |
| | 450 | | | | | | 455 | | | | | 460 | | | | | |

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | Asp | Ser | Arg | Ser | Ile | Asp | Ala | Val | Gln | Ser | Pro | Tyr | Gly | Tyr | Gln | Gly | |
| | 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
| | Lys | Trp | Thr | Ile | Asn | Trp | Ser | Thr | Asp | Asp | Lys | Lys | Ala | Thr | Val | Ser | |
| | | | | | 485 | | | | | 490 | | | | | 495 | | |
| 10 | Trp | Ala | Lys | Gln | Ser | Phe | Asn | Pro | Thr | Ala | Glu | Gln | Glu | Ala | Pro | Leu | |
| | | | | 500 | | | | | 505 | | | | | 510 | | | |
| | Val | Pro | Asn | Leu | Leu | Trp | Gly | Ser | Phe | Ile | Asp | Val | Arg | Ser | Phe | Gln | |
| | | | 515 | | | | | 520 | | | | | 525 | | | | |
| | Asn | Phe | Ile | Glu | Leu | Gly | Thr | Glu | Gly | Ala | Pro | Tyr | Glu | Lys | Arg | Phe | |
| | | 530 | | | | | 535 | | | | | 540 | | | | | |
| | Trp | Val | Ala | Gly | Ile | Ser | Asn | Val | Leu | His | Arg | Ser | Gly | Arg | Glu | Asn | |
| | 545 | | | | | 550 | | | | | 555 | | | | | 560 | |
| 20 | Gln | Arg | Lys | Phe | Arg | His | Val | Ser | Gly | Gly | Ala | Val | Val | Gly | Ala | Ser | |
| | | | | | 565 | | | | | 570 | | | | | 575 | | |
| | Thr | Arg | Met | Pro | Gly | Gly | Asp | Thr | Leu | Ser | Leu | Gly | Phe | Ala | Gln | Leu | |
| | | | | 580 | | | | | 585 | | | | | | 590 | | |
| | Phe | Ala | Arg | Asp | Lys | Asp | Tyr | Phe | Met | Asn | Thr | Asn | Phe | Ala | Lys | Thr | |
| | | | 595 | | | | | 600 | | | | | 605 | | | | |
| 30 | Tyr | Ala | Gly | Ser | Leu | Arg | Leu | Gln | His | Asp | Ala | Ser | Leu | Tyr | Ser | Val | |
| | | 610 | | | | | 615 | | | | | 620 | | | | | |
| | Val | Ser | Ile | Leu | Leu | Gly | Glu | Gly | Gly | Leu | Arg | Glu | Ile | Leu | Leu | Pro | |
| | 625 | | | | | 630 | | | | | 635 | | | | | 640 | |
| | Tyr | Val | Ser | Lys | Thr | Leu | Pro | Cys | Ser | Phe | Tyr | Gly | Gln | Leu | Ser | Tyr | |
| | | | | | 645 | | | | | 650 | | | | | 655 | | |
| 40 | Gly | His | Thr | Asp | His | Arg | Met | Lys | Thr | Glu | Ser | Leu | Pro | Pro | Pro | Pro | |
| | | | | 660 | | | | | 665 | | | | | 670 | | | |
| | Pro | Thr | Leu | Ser | Thr | Asp | His | Thr | Ser | Trp | Gly | Gly | Tyr | Val | Trp | Ala | |
| | | | 675 | | | | | 680 | | | | | 685 | | | | |
| | Gly | Glu | Leu | Gly | Thr | Arg | Val | Ala | Val | Glu | Asn | Thr | Ser | Gly | Arg | Gly | |
| | | 690 | | | | | 695 | | | | | 700 | | | | | |
| | Phe | Phe | Gln | Glu | Tyr | Thr | Pro | Phe | Val | Lys | Val | Gln | Ala | Val | Tyr | Ala | |
| | 705 | | | | | 710 | | | | | 715 | | | | | 720 | |
| 50 | Arg | Gln | Asp | Ser | Phe | Val | Glu | Leu | Gly | Ala | Ile | Ser | Arg | Asp | Phe | Ser | |
| | | | | | 725 | | | | | 730 | | | | | 735 | | |
| | Asp | Ser | His | Leu | Tyr | Asn | Leu | Ala | Ile | Pro | Leu | Gly | Ile | Lys | Leu | Glu | |
| | | | | 740 | | | | | 745 | | | | | 750 | | | |
| | Lys | Arg | Phe | Ala | Glu | Gln | Tyr | Tyr | His | Val | Val | Ala | Met | Tyr | Ser | Pro | |
| | | | 755 | | | | | 760 | | | | | 765 | | | | |
| 60 | Asp | Val | Cys | Arg | Ser | Asn | Pro | Lys | Cys | Thr | Thr | Thr | Leu | Leu | Ser | Asn | |
| | | 770 | | | | | 775 | | | | | | 780 | | | | |

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Gln Gly Ser Trp Lys Thr Lys Gly Ser Asn Leu Ala Arg Gln Ala Gly
 785 790 795 800
 Ile Val Gln Ala Ser Gly Phe Arg Ser Leu Gly Ala Ala Ala Glu Leu
 805 810 815
 10 Phe Gly Asn Phe Gly Phe Glu Trp Arg Gly Ser Ser Arg Ser Tyr Asn
 820 825 830
 Val Asp Ala Gly Ser Lys Ile Lys Phe
 835 840

<210> 29
 <211> 245
 <212> PRT
 <213> Chlamydia pneumoniae

20

<400> 29
 Met Pro Pro Leu Asn Ala Asp Asp Val Leu Pro Arg Asp His Leu Ser
 1 5 10 15

Asp Gly Ser Phe Ser Asp Thr Tyr Pro Asp Ile Thr Thr Gln Ala Ile
 20 25 30

Ile Leu Ile Phe Leu Ala Leu Ser Pro Phe Leu Val Met Leu Leu Thr
 35 40 45

30

Ser Tyr Leu Lys Ile Ile Ile Thr Leu Val Leu Leu Arg Asn Ala Leu
 50 55 60

Gly Val Gln Gln Thr Pro Pro Ser Gln Val Leu Asn Gly Ile Ala Leu
 65 70 75 80

Ile Leu Ser Ile Tyr Val Met Phe Pro Thr Gly Val Ala Met Tyr Lys
 85 90 95

40

Asp Ala Arg Lys Glu Ile Glu Ala Asn Thr Ile Pro Gln Ser Leu Phe
 100 105 110

Thr Ala Glu Gly Ala Glu Thr Val Phe Val Ala Leu Asn Lys Ser Lys
 115 120 125

Glu Pro Leu Arg Ser Phe Leu Ile Arg Asn Thr Pro Lys Ala Gln Ile
 130 135 140

50

Gln Ser Phe Tyr Lys Ile Ser Gln Lys Thr Phe Pro Ser Glu Ile Arg
 145 150 155 160

Ala His Leu Thr Ala Ser Asp Phe Val Ile Ile Ile Pro Ala Phe Ile
 165 170 175

Met Gly Gln Ile Lys Asn Ala Phe Glu Ile Gly Val Leu Ile Tyr Leu
 180 185 190

Pro Phe Phe Val Ile Asp Leu Val Thr Ala Asn Val Leu Val Ala Met
 195 200 205

60

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Gln Met Met Met Leu Ser Pro Leu Ser Ile Ser Leu Pro Leu Lys Leu
 210 215 220

Leu Leu Ile Val Met Val Asp Gly Trp Thr Leu Leu Leu Gln Gly Leu
 225 230 235 240

10 Met Ile Ser Phe Lys
 245

<210> 30

<211> 233

<212> PRT

<213> Chlamydia pneumoniae

<400> 30

20 Met Lys Phe Phe Ser Leu Ile Phe Lys Asp Asp Asp Val Ser Pro Asn
 1 5 10 15

Lys Lys Val Leu Ser Pro Glu Ala Phe Ser Ala Phe Leu Asp Ala Lys
 20 25 30

Glu Leu Leu Glu Lys Thr Lys Ala Asp Ser Glu Ala Tyr Val Ala Glu
 35 40 45

30 Thr Glu Gln Lys Cys Ala Gln Ile Arg Gln Glu Ala Lys Asp Gln Gly
 50 55 60

Phe Lys Glu Gly Ser Glu Ser Trp Ser Lys Gln Ile Ala Phe Leu Glu
 65 70 75 80

Glu Glu Thr Lys Asn Leu Arg Ile Arg Val Arg Glu Ala Leu Val Pro
 85 90 95

Leu Ala Ile Ala Ser Val Arg Lys Ile Ile Gly Lys Glu Leu Glu Leu
 100 105 110

40 His Pro Glu Thr Ile Val Ser Ile Ile Ser Gln Ala Leu Lys Glu Leu
 115 120 125

Thr Gln Asn Lys His Ile Ile Ile Ser Val Asn Pro Lys Asp Leu Pro
 130 135 140

Leu Val Glu Lys Ser Arg Pro Glu Leu Lys Asn Ile Val Glu Tyr Ala
 145 150 155 160

50 Asp Ser Leu Ile Leu Thr Ala Lys Pro Asp Val Thr Pro Gly Gly Cys
 165 170 175

Ile Ile Glu Thr Glu Ala Gly Ile Ile Asn Ala Gln Leu Asp Val Gln
 180 185 190

Leu Asp Ala Leu Glu Lys Ala Phe Ser Thr Ile Leu Lys Ala Lys Asn
 195 200 205

60 Pro Val Asp Glu Pro Ser Glu Thr Ser Ser Ser Thr Asp Ser Ser Ser
 210 215 220

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Leu Ser Asn Asp Gln Asp Lys Lys Glu
225 230

<210> 31
<211> 322
<212> PRT

10 <213> Chlamydia pneumoniae

<400> 31

Met Thr Leu Leu Cys Cys Thr Ser Cys Asn Ser Arg Ser Leu Ile Val
1 5 10 15

His Gly Leu Pro Gly Arg Glu Ala Asn Glu Ile Val Val Leu Leu Val
20 25 30

20 Ser Lys Gly Val Ala Ala Gln Lys Leu Pro Gln Ala Ala Ala Ala Thr
35 40 45

Ala Gly Ala Ala Thr Glu Gln Met Trp Asp Ile Ala Val Pro Ser Ala
50 55 60

Gln Ile Thr Glu Ala Leu Ala Ile Leu Asn Gln Ala Gly Leu Pro Arg
65 70 75 80

30 Met Lys Gly Thr Ser Leu Leu Asp Leu Phe Ala Lys Gln Gly Leu Val
85 90 95

Pro Ser Glu Leu Gln Glu Lys Ile Arg Tyr Gln Glu Gly Leu Ser Glu
100 105 110

Gln Met Ala Ser Thr Ile Arg Lys Met Asp Gly Val Val Asp Ala Ser
115 120 125

Val Gln Ile Ser Phe Thr Thr Glu Asn Glu Asp Asn Leu Pro Leu Thr
130 135 140

40 Ala Ser Val Tyr Ile Lys His Arg Gly Val Leu Asp Asn Pro Asn Ser
145 150 155 160

Ile Met Val Ser Lys Ile Lys Arg Leu Ile Ala Ser Ala Val Pro Gly
165 170 175

Leu Val Pro Glu Asn Val Ser Val Val Ser Asp Arg Ala Ala Tyr Ser
180 185 190

50 Asp Ile Thr Ile Asn Gly Pro Trp Gly Leu Thr Glu Glu Ile Asp Tyr
195 200 205

Val Ser Val Trp Gly Ile Ile Leu Ala Lys Ser Ser Leu Thr Lys Phe
210 215 220

Arg Leu Ile Phe Tyr Val Leu Ile Leu Ile Leu Phe Val Ile Ser Cys
225 230 235 240

Gly Leu Leu Trp Val Ile Trp Lys Thr His Thr Leu Ile Met Thr Met
245 250 255

60

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Gly Gly Thr Lys Gly Phe Phe Asn Pro Thr Pro Tyr Thr Lys Asn Ala
 260 265 270
 Leu Glu Ala Lys Lys Ala Glu Gly Ala Ala Ala Asp Lys Glu Lys Lys
 275 280 285
 10 Glu Asp Ala Asp Ser Gln Gly Glu Ser Lys Asn Ala Glu Thr Ser Asp
 290 295 300
 Lys Asp Ser Ser Asp Lys Asp Ala Pro Glu Gly Ser Asn Glu Ile Glu
 305 310 315 320
 Gly Ala

 <210> 32
 <211> 226
 20 <212> PRT
 <213> Chlamydia pneumoniae

 <400> 32
 Met Thr Ile Arg Val Arg Asn Leu Ala Tyr Ser Val Asn Lys Lys Lys
 1 5 10 15
 Ile Leu Asp Gly Val Thr Phe Ser Leu Glu Arg Gly His Ile Thr Leu
 20 25 30
 30 Phe Val Gly Lys Ser Gly Ser Gly Lys Thr Met Ile Leu Arg Ala Leu
 35 40 45
 Ala Gly Leu Val Gln Pro Thr Gln Gly Asp Ile Trp Ile Glu Gly Glu
 50 55 60
 Ala Pro Ala Leu Val Phe Gln Gln Pro Glu Leu Phe Ser His Met Thr
 65 70 75 80
 40 Val Leu Gly Asn Cys Thr His Pro Gln Ile His Ile Lys Gly Arg Ser
 85 90 95
 Thr Glu Glu Ala Arg Glu Lys Ala Phe Glu Leu Leu His Leu Leu Asp
 100 105 110
 Ile Glu Glu Val Ala Lys Asn Tyr Pro Asp Gln Leu Ser Gly Gly Gln
 115 120 125
 Lys Gln Arg Val Ala Ile Val Arg Ser Leu Cys Met Asp Lys His Thr
 130 135 140
 50 Leu Leu Phe Asp Glu Pro Thr Ser Ala Leu Asp Pro Phe Ala Thr Ala
 145 150 155 160
 Ser Phe Arg His Leu Leu Glu Thr Leu Arg Asp Gln Glu Leu Thr Val
 165 170 175
 Gly Leu Thr Thr His Asp Met Gln Phe Val His Ser Cys Leu Asp Arg
 180 185 190
 60 Ile Tyr Leu Ile Asp Gln Gly Thr Val Ala Gly Val Tyr Asp Lys Arg
 195 200 205

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Asp Gly Glu Leu Asp Ser Gly His Pro Leu Ser Lys Tyr Ile His Ser
 210 215 220

Ala Gln
 225

10 <210> 33
 <211> 436
 <212> PRT
 <213> Chlamydia pneumoniae

<400> 33
 Met Lys Arg Pro Phe Phe Thr Tyr Leu Cys Ile Ile Phe Tyr Gly Ser
 1 5 10 15

20 Cys Ala Ser Leu Ser Leu His Ala Gly Leu Ser Phe Pro Glu Val Arg
 20 25 30

Gly Ala Thr Ala Ala Val Val His Ala Asp Ser Gly Lys Val Phe Tyr
 35 40 45

Asp Lys Asp Ile Asp Ala Val Ile Tyr Pro Ala Ser Met Thr Lys Ile
 50 55 60

30 Ala Thr Ala Leu Phe Ile Leu Lys His Tyr Pro Thr Val Leu Asp Thr
 65 70 75 80

Leu Ile Lys Val Lys Gln Asp Ala Ile Ala Ser Ile Thr Pro Gln Ala
 85 90 95

Lys Lys Gln Ser Gly Tyr Arg Ser Pro Pro His Trp Leu Glu Thr Asp
 100 105 110

Gly Ser Thr Ile Gln Leu His Leu Arg Glu Glu Leu Leu Gly Trp Asp
 115 120 125

40 Leu Phe His Ala Leu Leu Val Cys Ser Ala Asn Asp Ala Ala Asn Val
 130 135 140

Leu Ala Met Ala Cys Cys Gly Ser Val Glu Lys Phe Met Asp Lys Leu
 145 150 155 160

Asn Phe Phe Leu Lys Glu Glu Ile Gly Cys Thr His Thr His Phe Asn
 165 170 175

50 Asn Pro His Gly Leu His His Pro Asn His Tyr Thr Thr Thr Arg Asp
 180 185 190

Leu Ile Ser Ile Met Arg Cys Ala Leu Lys Glu Pro Pro Phe Arg Gly
 195 200 205

Val Ile Ser Thr Thr Ser Tyr Lys Ile Gly Ala Thr Asn Leu His Gly
 210 215 220

Glu Arg Ile Leu Ser Pro Thr Asn Lys Leu Leu Leu Pro Gly Ser Thr
 225 230 235 240

60

| | | |
|-----|-----|-----|
| 245 | 250 | 255 |
|-----|-----|-----|

260 265 270

Val Thr Ile Ala Thr Gly Tyr Ser Gly Pro Val Ser Asp Leu Tyr Gln

| | | | |
|-----|-----|-----|--|
| 290 | 295 | 300 | |
|-----|-----|-----|--|

| | | | |
|-----|-----|-----|-----|
| 305 | 310 | 315 | 320 |
|-----|-----|-----|-----|

| | | | |
|--|-----|-----|-----|
| | 325 | 330 | 335 |
|--|-----|-----|-----|

20

370 375 380

30 Pro Cys Arg Phe Glu Arg Thr Ile Lys Pro Trp Lys Leu Tyr Met Lys

 $\langle 211 \rangle$ 245

<212> PRT

<213> Chlamydia pneumoniae

<400> 34

Val Val His Ala Asp Ser Gly Lys Val Phe Tyr

Asp Lys Asp Ile Asp Ala Val Ile Tyr Pro Ala Ser Met Thr Lys Ile

Ala Thr Ala Leu Phe Ile Leu Lys His Tyr Pro Thr Val Leu Asp Thr

Leu Ile Lys Val Lys Gln Asp Ala Ile Ala Ser Ile Thr Pro Gln Ala

60

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Lys Lys Gln Ser Gly Tyr Arg Ser Pro Pro His Trp Leu Glu Thr Asp
 60 65 70 75
 Gly Ser Thr Ile Gln Leu His Leu Arg Glu Glu Leu Leu Gly Trp Asp
 80 85 90
 10 Leu Phe His Ala Leu Leu Val Cys Ser Ala Asn Asp Ala Ala Asn Val
 95 100 105
 Leu Ala Met Ala Cys Cys Gly Ser Val Glu Lys Phe Met Asp Lys Leu
 110 115 120
 Asn Phe Phe Leu Lys Glu Glu Ile Gly Cys Thr His Thr His Phe Asn
 125 130 135
 20 Asn Pro His Gly Leu His His Pro Asn His Tyr Thr Thr Thr Arg Asp
 140 145 150 155
 Leu Ile Ser Ile Met Arg Cys Ala Leu Lys Glu Pro Pro Phe Arg Gly
 160 165 170
 Val Ile Ser Thr Thr Ser Tyr Lys Ile Gly Ala Thr Asn Leu His Gly
 175 180 185
 Glu Arg Ile Leu Ser Pro Thr Asn Lys Leu Leu Leu Pro Gly Ser Thr
 190 195 200
 30 Tyr His Tyr Pro Pro Ala Leu Gly Gly Lys Thr Gly Thr Thr Lys Thr
 205 210 215
 Ala Gly Lys Asn Leu Ile Met Ala Ala Glu Lys Asn Asn Arg Leu Leu
 220 225 230 235
 Val Thr Ile Ala Thr Gly Tyr Ser Gly Pro
 240 245
 40 <210> 35
 <211> 645
 <212> PRT
 <213> Chlamydia pneumoniae
 <400> 35
 Met Ala Ser Asn Pro Ile Leu Gln Ile Glu Asp Leu Ser Ile Thr Leu
 1 5 10 15
 50 Ala Lys Gln Arg Gln Gln Tyr Pro Ile Val Gln Ser Leu Ser Phe Thr
 20 25 30
 Ile Asn Glu Gly Gln Thr Leu Ala Ile Ile Gly Glu Ser Gly Ser Gly
 35 40 45
 Lys Ser Val Ser Ala His Ala Ile Leu Arg Leu Leu Pro Cys Pro Pro
 50 55 60
 60 Phe Ser Val Ser Gly Gln Val Asn Phe Gln Gly His Asn Leu Leu Thr
 65 70 75 80

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | Ala | Ser | Arg | Ser | Ile | Gln | Lys | Lys | Ile | Ile | Gly | Thr | Glu | Ile | Ser | Met | |
| | | | | | 85 | | | | | 90 | | | | | 95 | | |
| | Ile | Phe | Gln | Asn | Pro | Gln | Ala | Ser | Leu | Asn | Pro | Val | Phe | Thr | Ile | Glu | |
| | | | | 100 | | | | | 105 | | | | | 110 | | | |
| 10 | Gln | Gln | Phe | Arg | Glu | Ile | Ile | His | Thr | His | Leu | Ala | Leu | Thr | Ala | Glu | |
| | | | 115 | | | | | 120 | | | | | 125 | | | | |
| | Val | Ala | Lys | Glu | Lys | Met | Leu | Tyr | Ala | Leu | Glu | Glu | Thr | Gly | Phe | His | |
| | | 130 | | | | | 135 | | | | | 140 | | | | | |
| | Asp | Pro | Arg | Leu | Cys | Leu | Asn | Leu | Tyr | Pro | His | Gln | Leu | Ser | Gly | Gly | |
| | 145 | | | | | 150 | | | | | 155 | | | | | 160 | |
| | Met | Leu | Gln | Arg | Ile | Cys | Ile | Ala | Met | Ala | Leu | Leu | Cys | Ser | Pro | Lys | |
| | | | | | 165 | | | | | 170 | | | | | 175 | | |
| 20 | Leu | Leu | Ile | Ala | Asp | Glu | Pro | Thr | Thr | Ala | Leu | Asp | Val | Ser | Val | Gln | |
| | | | | 180 | | | | | 185 | | | | | 190 | | | |
| | Tyr | Gln | Ile | Leu | Gln | Leu | Leu | Lys | Thr | Leu | Gln | Lys | Lys | Thr | Gly | Met | |
| | | 195 | | | | | | 200 | | | | | 205 | | | | |
| | Ser | Leu | Leu | Ile | Ile | Thr | His | Asn | Met | Gly | Val | Val | Ala | Glu | Thr | Ala | |
| | | 210 | | | | | 215 | | | | | 220 | | | | | |
| 30 | Asp | Asp | Val | Leu | Val | Leu | Tyr | Ala | Gly | Arg | Met | Val | Glu | Cys | Ala | Pro | |
| | 225 | | | | | 230 | | | | | 235 | | | | 240 | | |
| | Ala | Val | Gln | Met | Phe | His | Asn | Pro | Ser | His | Pro | Tyr | Thr | Arg | Asp | Leu | |
| | | | | 245 | | | | | | 250 | | | | | 255 | | |
| | Leu | Ala | Ser | Arg | Pro | Ser | Leu | Gln | Pro | Gln | Gln | Leu | Gly | Ser | Phe | Asn | |
| | | | | 260 | | | | | 265 | | | | | 270 | | | |
| 40 | Pro | Ile | Pro | Gly | Gln | Pro | Pro | His | Tyr | Thr | Ala | Phe | Pro | Ser | Gly | Cys | |
| | | 275 | | | | | | 280 | | | | | 285 | | | | |
| | Arg | Tyr | His | Pro | Arg | Cys | Ser | Lys | Ile | Leu | Asn | Arg | Cys | Ser | Ala | Glu | |
| | | 290 | | | | 295 | | | | | | 300 | | | | | |
| | Ala | Pro | Glu | Ile | Tyr | Pro | Val | Arg | Glu | Gly | His | Lys | Val | Arg | Val | Gly | |
| | 305 | | | | | 310 | | | | | 315 | | | | 320 | | |
| | Cys | Met | Thr | Thr | Asn | Phe | Pro | Gln | Pro | Leu | Ile | Gln | Ala | Thr | Ser | Leu | |
| | | | | | 325 | | | | | 330 | | | | | 335 | | |
| 50 | Thr | Lys | His | Tyr | Tyr | Lys | Arg | Ser | Phe | Trp | Phe | Gln | Gly | Lys | Thr | Ile | |
| | | | | 340 | | | | | 345 | | | | | 350 | | | |
| | Ala | Ser | Arg | Pro | Val | Asp | Asp | Val | Ser | Phe | Ser | Leu | Tyr | Ser | Arg | Arg | |
| | | | 355 | | | | | 360 | | | | | 365 | | | | |
| | Ala | Val | Gly | Leu | Ile | Gly | Glu | Ser | Gly | Ser | Gly | Lys | Ser | Thr | Leu | Ala | |
| | | | 370 | | | | 375 | | | | | 380 | | | | | |
| 60 | Leu | Ala | Leu | Ala | Gly | Leu | Leu | Pro | Leu | Thr | Ser | Gly | Phe | Leu | Thr | Phe | |
| | 385 | | | | | 390 | | | | | 395 | | | | | 400 | |

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Asn Gly Thr Pro Ile Lys Leu His Ser Lys His Gly Arg His Gln Leu
 405 410 415
 Arg Ser Gln Val Arg Leu Val Phe Gln Asn Pro Gln Ala Ser Leu Asn
 420 425 430
 10 Pro Arg Lys Thr Ile Leu Asp Ser Leu Gly His Ser Leu Leu Tyr His
 435 440 445
 Lys Leu Val Pro Lys Glu Lys Val Leu Ala Thr Val Arg Glu Tyr Leu
 450 455 460
 Glu Leu Val Gly Leu Ser Glu Glu Tyr Phe Tyr Arg Tyr Pro His Gln
 465 470 475 480
 Leu Ser Gly Gly Gln Gln Gln Arg Val Ser Ile Ala Arg Ala Leu Leu
 485 490 495
 20 Gly Val Pro Gln Leu Ile Ile Cys Asp Glu Ile Val Ser Ala Leu Asp
 500 505 510
 Leu Ser Ile Gln Ala Gln Ile Leu Asn Met Leu Ala Glu Leu Gln Lys
 515 520 525
 Lys Leu Ser Leu Thr Tyr Leu Phe Ile Ser His Asp Leu Ala Val Val
 530 535 540
 30 Arg Ser Phe Cys Thr Glu Val Phe Ile Met Tyr Lys Gly Gln Ile Val
 545 550 555 560
 Glu Lys Gly Asn Thr Lys Arg Ile Phe Ser Asp Pro Gln His Pro Tyr
 565 570 575
 Thr Arg Met Leu Leu Asn Ala Gln Leu Pro Glu Thr Pro Asp Gln Arg
 580 585 590
 Gln Ser Lys Pro Ile Phe Gln Glu Tyr His Lys Asp Ser Glu Glu Ser
 595 600 605
 40 Cys Ser Thr Gly Cys Tyr Phe Tyr Asn Arg Cys Pro Gln Lys Gln Glu
 610 615 620
 Ala Cys Lys Ser Glu Ile Ile Pro Asn Gln Gly Asp Ala His His Thr
 625 630 635 640
 Tyr Arg Cys Ile His
 645
 50

<210> 36
 <211> 588
 <212> PRT
 <213> Chlamydia pneumoniae

<400> 36
 Ile Leu Gln Ile Glu Asp Leu Ser Ile Thr Leu
 1 5 10

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | Ala | Lys | Gln | Arg | Gln | Gln | Tyr | Pro | Ile | Val | Gln | Ser | Leu | Ser | Phe | Thr | |
| | | | | 15 | | | | | 20 | | | | | 25 | | | |
| | Ile | Asn | Glu | Gly | Gln | Thr | Leu | Ala | Ile | Ile | Gly | Glu | Ser | Gly | Ser | Gly | |
| | | | 30 | | | | | 35 | | | | | 40 | | | | |
| 10 | Lys | Ser | Val | Ser | Ala | His | Ala | Ile | Leu | Arg | Leu | Leu | Pro | Cys | Pro | Pro | |
| | | 45 | | | | | 50 | | | | | 55 | | | | | |
| | Phe | Ser | Val | Ser | Gly | Gln | Val | Asn | Phe | Gln | Gly | His | Asn | Leu | Leu | Thr | |
| | 60 | | | | | 65 | | | | | 70 | | | | | 75 | |
| | Ala | Ser | Arg | Ser | Ile | Gln | Lys | Lys | Ile | Ile | Gly | Thr | Glu | Ile | Ser | Met | |
| | | | | | 80 | | | | | 85 | | | | | 90 | | |
| | Ile | Phe | Gln | Asn | Pro | Gln | Ala | Ser | Leu | Asn | Pro | Val | Phe | Thr | Ile | Glu | |
| | | | | 95 | | | | | 100 | | | | | 105 | | | |
| 20 | Gln | Gln | Phe | Arg | Glu | Ile | Ile | His | Thr | His | Leu | Ala | Leu | Thr | Ala | Glu | |
| | | | 110 | | | | | 115 | | | | | 120 | | | | |
| | Val | Ala | Lys | Glu | Lys | Met | Leu | Tyr | Ala | Leu | Glu | Glu | Thr | Gly | Phe | His | |
| | | 125 | | | | | 130 | | | | | 135 | | | | | |
| | Asp | Pro | Arg | Leu | Cys | Leu | Asn | Leu | Tyr | Pro | His | Gln | Leu | Ser | Gly | Gly | |
| | 140 | | | | | 145 | | | | | 150 | | | | | 155 | |
| 30 | Met | Leu | Gln | Arg | Ile | Cys | Ile | Ala | Met | Ala | Leu | Leu | Cys | Ser | Pro | Lys | |
| | | | | | 160 | | | | | 165 | | | | | 170 | | |
| | Leu | Leu | Ile | Ala | Asp | Glu | Pro | Thr | Thr | Ala | Leu | Asp | Val | Ser | Val | Gln | |
| | | | | 175 | | | | | 180 | | | | | | 185 | | |
| | Tyr | Gln | Ile | Leu | Gln | Leu | Leu | Lys | Thr | Leu | Gln | Lys | Lys | Thr | Gly | Met | |
| | | | 190 | | | | | 195 | | | | | 200 | | | | |
| | Ser | Leu | Leu | Ile | Ile | Thr | His | Asn | Met | Gly | Val | Val | Ala | Glu | Thr | Ala | |
| 40 | | 205 | | | | | 210 | | | | | 215 | | | | | |
| | Asp | Asp | Val | Leu | Val | Leu | Tyr | Ala | Gly | Arg | Met | Val | Glu | Cys | Ala | Pro | |
| | 220 | | | | | 225 | | | | | 230 | | | | | 235 | |
| | Ala | Val | Gln | Met | Phe | His | Asn | Pro | Ser | His | Pro | Tyr | Thr | Arg | Asp | Leu | |
| | | | | 240 | | | | | | 245 | | | | | 250 | | |
| | Leu | Ala | Ser | Arg | Pro | Ser | Leu | Gln | Pro | Gln | Gln | Leu | Gly | Ser | Phe | Asn | |
| | | | | 255 | | | | | 260 | | | | | 265 | | | |
| 50 | Pro | Ile | Pro | Gly | Gln | Pro | Pro | His | Tyr | Thr | Ala | Phe | Pro | Ser | Gly | Cys | |
| | | | 270 | | | | | 275 | | | | | | 280 | | | |
| | Arg | Tyr | His | Pro | Arg | Cys | Ser | Lys | Ile | Leu | Asn | Arg | Cys | Ser | Ala | Glu | |
| | | 285 | | | | | 290 | | | | | 295 | | | | | |
| | Ala | Pro | Glu | Ile | Tyr | Pro | Val | Arg | Glu | Gly | His | Lys | Val | Arg | Val | Gly | |
| | 300 | | | | | 305 | | | | | 310 | | | | | 315 | |
| 60 | Cys | Met | Thr | Thr | Asn | Phe | Pro | Gln | Pro | Leu | Ile | Gln | Ala | Thr | Ser | Leu | |
| | | | | | 320 | | | | | 325 | | | | | 330 | | |

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Thr Lys His Tyr Tyr Lys Arg Ser Phe Trp Phe Gln Gly Lys Thr Ile
 335 340 345
 Ala Ser Arg Pro Val Asp Asp Val Ser Phe Ser Leu Tyr Ser Arg Arg
 350 355 360
 10 Ala Val Gly Leu Ile Gly Glu Ser Gly Ser Gly Lys Ser Thr Leu Ala
 365 370 375
 Leu Ala Leu Ala Gly Leu Leu Pro Leu Thr Ser Gly Phe Leu Thr Phe
 380 385 390 395
 Asn Gly Thr Pro Ile Lys Leu His Ser Lys His Gly Arg His Gln Leu
 400 405 410
 20 Arg Ser Gln Val Arg Leu Val Phe Gln Asn Pro Gln Ala Ser Leu Asn
 415 420 425
 Pro Arg Lys Thr Ile Leu Asp Ser Leu Gly His Ser Leu Leu Tyr His
 430 435 440
 Lys Leu Val Pro Lys Glu Lys Val Leu Ala Thr Val Arg Glu Tyr Leu
 445 450 455
 Glu Leu Val Gly Leu Ser Glu Glu Tyr Phe Tyr Arg Tyr Pro His Gln
 460 465 470 475
 30 Leu Ser Gly Gly Gln Gln Gln Arg Val Ser Ile Ala Arg Ala Leu Leu
 480 485 490
 Gly Val Pro Gln Leu Ile Ile Cys Asp Glu Ile Val Ser Ala Leu Asp
 495 500 505
 Leu Ser Ile Gln Ala Gln Ile Leu Asn Met Leu Ala Glu Leu Gln Lys
 510 515 520
 40 Lys Leu Ser Leu Thr Tyr Leu Phe Ile Ser His Asp Leu Ala Val Val
 525 530 535
 Arg Ser Phe Cys Thr Glu Val Phe Ile Met Tyr Lys Gly Gln Ile Val
 540 545 550 555
 Glu Lys Gly Asn Thr Lys Arg Ile Phe Ser Asp Pro Gln His Pro Tyr
 560 565 570
 Thr Arg Met Leu Leu Asn Ala Gln Leu Pro Glu Thr Pro Asp Gln Arg
 575 585 585
 50 Gln

 <210> 37
 <211> 698
 <212> PRT
 <213> Chlamydia pneumoniae .

 <400> 37
 60 Met Pro Gly Ile Glu Lys Ala Ala Thr Thr Val Ala Val Pro Gln Asp
 1 5 10 15

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| | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | Lys | Ser | Glu | Glu | Glu | Lys | Val | Lys | Glu | Arg | Leu | Thr | Lys | Arg | Glu | Leu |
| | | | | 20 | | | | | 25 | | | | | 30 | | |
| | Thr | Cys | Glu | Asp | Leu | Lys | Asp | Asn | Gly | Tyr | Thr | Val | Asn | Phe | Glu | Asp |
| | | | 35 | | | | | 40 | | | | | 45 | | | |
| 10 | Ile | Ser | Ile | Leu | Glu | Leu | Leu | Gln | Phe | Val | Ser | Lys | Ile | Ser | Gly | Thr |
| | | 50 | | | | | 55 | | | | | 60 | | | | |
| | Asn | Phe | Val | Phe | Asp | Ser | Asn | Asp | Leu | Gln | Phe | Asn | Val | Thr | Ile | Val |
| | 65 | | | | | 70 | | | | 75 | | | | | | 80 |
| | Ser | His | Asp | Pro | Thr | Ser | Val | Asp | Asp | Leu | Ser | Thr | Ile | Leu | Leu | Gln |
| | | | | | 85 | | | | | 90 | | | | | 95 | |
| | Val | Leu | Lys | Met | His | Asp | Leu | Lys | Val | Val | Glu | Gln | Gly | Asn | Asn | Val |
| 20 | | | | 100 | | | | | 105 | | | | | 110 | | |
| | Leu | Ile | Tyr | Arg | Asn | Pro | His | Leu | Ser | Lys | Leu | Ser | Thr | Val | Val | Thr |
| | | | 115 | | | | | 120 | | | | | 125 | | | |
| | Asp | Ser | Ser | Leu | Lys | Glu | Thr | Cys | Glu | Ala | Val | Val | Val | Thr | Arg | Val |
| | | 130 | | | | | 135 | | | | | | 140 | | | |
| | Phe | Arg | Leu | Tyr | Arg | Arg | Gln | Pro | Ser | Ala | Ala | Val | Asn | Ile | Ile | Gln |
| | 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| 30 | Pro | Leu | Leu | Ser | His | Asp | Ala | Ile | Val | Ser | Ala | Ser | Glu | Ala | Thr | Arg |
| | | | | | 165 | | | | | 170 | | | | | 175 | |
| | His | Val | Ile | Ile | Ser | Asp | Ile | Ala | Gly | Asn | Val | Asp | Lys | Val | Ser | Asp |
| | | | | 180 | | | | | 185 | | | | | 190 | | |
| | Leu | Leu | Ala | Ala | Leu | Asp | Cys | Pro | Gly | Thr | Ser | Val | Asp | Met | Thr | Glu |
| | | | 195 | | | | | 200 | | | | | 205 | | | |
| 40 | Tyr | Glu | Val | Lys | Tyr | Ala | Asn | Pro | Ala | Ala | Leu | Val | Ser | Tyr | Cys | Gln |
| | | 210 | | | | | 215 | | | | | 220 | | | | |
| | Asp | Val | Leu | Gly | Thr | Leu | Ala | Glu | Asp | Asp | Ala | Phe | Gln | Met | Phe | Ile |
| | 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| | Gln | Pro | Gly | Thr | Asn | Lys | Ile | Phe | Val | Val | Ser | Ser | Pro | Arg | Leu | Ala |
| | | | | | 245 | | | | | 250 | | | | | 255 | |
| | Asn | Lys | Ala | Glu | Gln | Leu | Leu | Lys | Ser | Leu | Asp | Val | Pro | Glu | Met | Ala |
| 50 | | | | 260 | | | | | 265 | | | | | 270 | | |
| | His | Thr | Leu | Asp | Asp | Pro | Ala | Ser | Thr | Ala | Leu | Ala | Leu | Gly | Gly | Thr |
| | | | 275 | | | | | 280 | | | | | | 285 | | |
| | Gly | Thr | Thr | Ser | Pro | Lys | Ser | Leu | Arg | Phe | Phe | Met | Tyr | Lys | Leu | Lys |
| | | 290 | | | | | 295 | | | | | 300 | | | | |
| | Tyr | Gln | Asn | Gly | Glu | Val | Ile | Ala | Asn | Ala | Leu | Gln | Asp | Ile | Gly | Tyr |
| | 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| 60 | Asn | Leu | Tyr | Val | Thr | Thr | Ala | Met | Asp | Glu | Asp | Phe | Ile | Asn | Thr | Leu |
| | | | | | 325 | | | | | 330 | | | | | 335 | |

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | Asn | Ser | Ile | Gln | Trp | Leu | Glu | Val | Asn | Asn | Ser | Ile | Val | Ile | Ile | Gly | |
| | | | | 340 | | | | | 345 | | | | | 350 | | | |
| | Asn | Gln | Gly | Asn | Val | Asp | Arg | Val | Ile | Gly | Leu | Leu | Asn | Gly | Leu | Asp | |
| | | | 355 | | | | | 360 | | | | | 365 | | | | |
| 10 | Leu | Pro | Pro | Lys | Gln | Val | Tyr | Ile | Glu | Val | Leu | Ile | Leu | Asp | Thr | Ser | |
| | | 370 | | | | | 375 | | | | | 380 | | | | | |
| | Leu | Glu | Lys | Ser | Trp | Asp | Phe | Gly | Val | Gln | Trp | Val | Ala | Leu | Gly | Asp | |
| | 385 | | | | | 390 | | | | | 395 | | | | 400 | | |
| | Glu | Gln | Ser | Lys | Val | Ala | Tyr | Ala | Ser | Gly | Leu | Leu | Asn | Asn | Thr | Gly | |
| | | | | | 405 | | | | | 410 | | | | | 415 | | |
| | Ile | Ala | Thr | Pro | Thr | Lys | Ala | Thr | Val | Pro | Pro | Gly | Thr | Pro | Asn | Pro | |
| | | | | 420 | | | | | 425 | | | | | 430 | | | |
| 20 | Gly | Ser | Ile | Pro | Leu | Pro | Thr | Pro | Gly | Gln | Leu | Thr | Gly | Phe | Ser | Asp | |
| | | | 435 | | | | | 440 | | | | | 445 | | | | |
| | Met | Leu | Asn | Ser | Ser | Ser | Ala | Phe | Gly | Leu | Gly | Ile | Ile | Gly | Asn | Val | |
| | 450 | | | | | | 455 | | | | | 460 | | | | | |
| | Leu | Ser | His | Lys | Gly | Lys | Ser | Phe | Leu | Thr | Leu | Gly | Gly | Leu | Leu | Ser | |
| | 465 | | | | | 470 | | | | | 475 | | | | 480 | | |
| 30 | Ala | Leu | Asp | Gln | Asp | Gly | Asp | Thr | Val | Ile | Val | Leu | Asn | Pro | Arg | Ile | |
| | | | | | 485 | | | | | 490 | | | | | 495 | | |
| | Met | Ala | Gln | Asp | Thr | Gln | Gln | Ala | Ser | Phe | Phe | Val | Gly | Gln | Thr | Val | |
| | | | | 500 | | | | | 505 | | | | | 510 | | | |
| | Pro | Tyr | Gln | Thr | Ile | Lys | Tyr | Tyr | Ile | Gln | Glu | Thr | Gly | Thr | Val | Thr | |
| | | | 515 | | | | | 520 | | | | | 525 | | | | |
| 40 | Gln | Asn | Ile | Asp | Tyr | Glu | Asp | Ile | Gly | Val | Asn | Leu | Val | Val | Thr | Ser | |
| | | 530 | | | | | 535 | | | | | 540 | | | | | |
| | Thr | Val | Ala | Pro | Asn | Asn | Val | Val | Thr | Leu | Gln | Ile | Glu | Gln | Thr | Ile | |
| | 545 | | | | | 550 | | | | | 555 | | | | | 560 | |
| | Ser | Glu | Leu | His | Ser | Ala | Ser | Gly | Ser | Leu | Thr | Pro | Val | Thr | Asp | Lys | |
| | | | | | 565 | | | | | 570 | | | | | 575 | | |
| | Thr | Tyr | Ala | Ala | Thr | Arg | Leu | Gln | Ile | Pro | Asp | Gly | Cys | Phe | Leu | Val | |
| | | | | 580 | | | | | 585 | | | | | 590 | | | |
| 50 | Met | Ser | Gly | His | Ile | Arg | Asp | Lys | Thr | Thr | Lys | Val | Val | Ser | Gly | Val | |
| | | | 595 | | | | | 600 | | | | | 605 | | | | |
| | Pro | Leu | Leu | Asn | Ser | Ile | Pro | Leu | Ile | Arg | Gly | Leu | Phe | Ser | Arg | Thr | |
| | | 610 | | | | | 615 | | | | | 620 | | | | | |
| | Ile | Asp | Gln | Arg | Gln | Lys | Arg | Asn | Ile | Met | Met | Phe | Ile | Lys | Pro | Lys | |
| | 625 | | | | | 630 | | | | 635 | | | | | 640 | | |
| 60 | Val | Ile | Ser | Ser | Phe | Glu | Glu | Gly | Thr | Arg | Val | Thr | Asn | Lys | Glu | Gly | |
| | | | | | 645 | | | | | 650 | | | | | 655 | | |

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Tyr Arg Tyr Asn Trp Glu Ala Asp Glu Gly Ser Met Gln Val Ala Pro
 660 665 670

Arg His Ala Pro Glu Cys Gln Gly Pro Pro Ser Leu Gln Ala Glu Ser
 675 680 685

10 Asp Phe Lys Ile Ile Glu Ile Glu Ala Gln
 690 695

<210> 38

<211> 547

<212> PRT

<213> Chlamydia pneumoniae

<400> 38

20 Met Ser Arg Lys Asp Asn Glu Val Ser Leu Ala Arg Ser Ile Phe Asn
 1 5 10 15

Ile Leu Ser Gly Thr Phe Cys Ser Arg Ile Thr Gly Ile Phe Arg Glu
 20 25 30

Ile Ala Met Ala Thr Tyr Phe Gly Ala Asp Pro Ile Val Ala Ala Phe
 35 40 45

30 Trp Leu Gly Phe Arg Thr Val Phe Phe Leu Arg Lys Ile Leu Gly Gly
 50 55 60

Leu Ile Leu Glu Gln Ala Phe Ile Pro His Phe Glu Phe Leu Arg Ala
 65 70 75 80

Gln Ser Leu Asp Arg Ala Ala Phe Phe Phe Arg Arg Phe Ser Arg Leu
 85 90 95

Ile Lys Gly Ser Thr Ile Ile Phe Thr Leu Leu Ile Glu Ala Val Leu
 100 105 110

40 Trp Val Phe Phe Asn Asn Val Glu Glu Gly Thr Tyr Asp Met Ile Leu
 115 120 125

Leu Thr Met Ile Leu Leu Pro Cys Gly Ile Phe Leu Met Met Tyr Asn
 130 135 140

Val Asn Gly Ala Leu Leu His Cys Gly Asn Lys Phe Phe Gly Val Gly
 145 150 155 160

50 Leu Ala Pro Val Val Val Asn Ile Ile Trp Ile Phe Phe Val Ile Ala
 165 170 175

Ala Arg His Ser Asp Pro Arg Glu Arg Ile Ile Gly Leu Ser Val Ala
 180 185 190

Leu Val Ile Gly Phe Phe Phe Glu Trp Leu Ile Thr Val Pro Gly Val
 195 200 205

Trp Lys Phe Leu Leu Glu Ala Lys Ser Pro Pro Gln Glu His Asp Ser
 210 215 220

60

63/83

| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | Val | Arg | Ala | Leu | Leu | Ala | Pro | Leu | Ser | Leu | Gly | Ile | Leu | Thr | Ser | Ser | |
| | 225 | | | | | 230 | | | | | 235 | | | | | 240 | |
| | Ile | Phe | Gln | Leu | Asn | Leu | Leu | Ser | Asp | Ile | Cys | Leu | Ala | Arg | Tyr | Val | |
| | | | | | 245 | | | | | 250 | | | | | 255 | | |
| 10 | His | Glu | Ile | Gly | Pro | Leu | Tyr | Leu | Met | Tyr | Ser | Leu | Lys | Ile | Tyr | Gln | |
| | | | | 260 | | | | | 265 | | | | | 270 | | | |
| | Leu | Pro | Ile | His | Leu | Phe | Gly | Phe | Gly | Val | Phe | Thr | Val | Leu | Leu | Pro | |
| | | | 275 | | | | | 280 | | | | | 285 | | | | |
| | Ala | Ile | Ser | Arg | Cys | Val | Gln | Arg | Glu | Asp | His | Glu | Arg | Gly | Leu | Lys | |
| | | 290 | | | | | 295 | | | | | 300 | | | | | |
| | Leu | Met | Lys | Phe | Val | Leu | Thr | Leu | Thr | Met | Ser | Val | Met | Ile | Ile | Met | |
| | 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| 20 | Thr | Ala | Gly | Leu | Leu | Leu | Leu | Ala | Leu | Pro | Gly | Val | Arg | Val | Leu | Tyr | |
| | | | | | 325 | | | | | 330 | | | | | 335 | | |
| | Glu | His | Gly | Leu | Phe | Pro | Gln | Ser | Ala | Val | Tyr | Ala | Ile | Val | Arg | Val | |
| | | | | 340 | | | | | 345 | | | | | 350 | | | |
| | Leu | Arg | Gly | Tyr | Gly | Ala | Ser | Ile | Ile | Pro | Met | Ala | Leu | Ala | Pro | Leu | |
| | | | 355 | | | | | 360 | | | | | 365 | | | | |
| 30 | Val | Ser | Val | Leu | Phe | Tyr | Ala | Gln | Arg | Gln | Tyr | Ala | Val | Pro | Leu | Phe | |
| | | 370 | | | | | 375 | | | | | 380 | | | | | |
| | Ile | Gly | Ile | Gly | Thr | Ala | Leu | Ala | Asn | Ile | Val | Leu | Ser | Leu | Val | Leu | |
| | 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| | Gly | Arg | Trp | Val | Leu | Lys | Asp | Val | Ser | Gly | Ile | Ser | Tyr | Ala | Thr | Ser | |
| | | | | 405 | | | | | | 410 | | | | | 415 | | |
| 40 | Ile | Thr | Ala | Trp | Val | Gln | Leu | Tyr | Phe | Leu | Trp | Tyr | Tyr | Ser | Ser | Lys | |
| | | | | 420 | | | | | 425 | | | | | 430 | | | |
| | Arg | Leu | Pro | Met | Tyr | Ser | Lys | Leu | Leu | Trp | Glu | Ser | Ile | Arg | Arg | Ser | |
| | | | 435 | | | | | 440 | | | | | 445 | | | | |
| | Ile | Lys | Val | Met | Gly | Thr | Thr | Met | Leu | Ala | Cys | Met | Ile | Thr | Leu | Gly | |
| | | 450 | | | | | 455 | | | | | 460 | | | | | |
| | Leu | Asn | Ile | Leu | Thr | Gln | Thr | Thr | Tyr | Val | Ile | Phe | Leu | Asn | Pro | Leu | |
| | 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
| 50 | Thr | Pro | Leu | Ala | Trp | Pro | Leu | Ser | Ser | Ile | Thr | Ala | Gln | Ala | Ile | Ala | |
| | | | | | 485 | | | | | 490 | | | | | 495 | | |
| | Phe | Leu | Ser | Glu | Ser | Cys | Ile | Phe | Leu | Ala | Phe | Leu | Phe | Gly | Phe | Ala | |
| | | | | 500 | | | | | 505 | | | | | 510 | | | |
| | Lys | Leu | Leu | Arg | Val | Glu | Asp | Leu | Ile | Asn | Leu | Ala | Ser | Phe | Glu | Tyr | |
| | | | 515 | | | | | 520 | | | | | 525 | | | | |
| 60 | Trp | Arg | Gly | Gln | Arg | Gly | Leu | Leu | Gln | Arg | Gln | His | Val | Met | Gln | Asp | |
| | | 530 | | | | | 535 | | | | | 540 | | | | | |

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Thr Gln Asn
545

<210> 39
<211> 535
<212> PRT

10 <213> Chlamydia pneumoniae

<400> 39

Arg Lys Asp Asn Glu Val Ser Leu Ala Arg Ser Ile Phe Asn
1 5 10

Ile Leu Ser Gly Thr Phe Cys Ser Arg Ile Thr Gly Ile Phe Arg Glu
15 20 25 30

20 Ile Ala Met Ala Thr Tyr Phe Gly Ala Asp Pro Ile Val Ala Ala Phe
35 40 45

Trp Leu Gly Phe Arg Thr Val Phe Phe Leu Arg Lys Ile Leu Gly Gly
50 55 60

Leu Ile Leu Glu Gln Ala Phe Ile Pro His Phe Glu Phe Leu Arg Ala
65 70 75

30 Gln Ser Leu Asp Arg Ala Ala Phe Phe Phe Arg Arg Phe Ser Arg Leu
80 85 90

Ile Lys Gly Ser Thr Ile Ile Phe Thr Leu Leu Ile Glu Ala Val Leu
95 100 105 110

Trp Val Phe Phe Asn Asn Val Glu Glu Gly Thr Tyr Asp Met Ile Leu
115 120 125

Leu Thr Met Ile Leu Leu Pro Cys Gly Ile Phe Leu Met Met Tyr Asn
130 135 140

40 Val Asn Gly Ala Leu Leu His Cys Gly Asn Lys Phe Phe Gly Val Gly
145 150 155

Leu Ala Pro Val Val Val Asn Ile Ile Trp Ile Phe Phe Val Ile Ala
160 165 170

Ala Arg His Ser Asp Pro Arg Glu Arg Ile Ile Gly Leu Ser Val Ala
175 180 185 190

50 Leu Val Ile Gly Phe Phe Phe Glu Trp Leu Ile Thr Val Pro Gly Val
195 200 205

Trp Lys Phe Leu Leu Glu Ala Lys Ser Pro Pro Gln Glu His Asp Ser
210 215 220

Val Arg Ala Leu Leu Ala Pro Leu Ser Leu Gly Ile Leu Thr Ser Ser
225 230 235

Ile Phe Gln Leu Asn Leu Leu Ser Asp Ile Cys Leu Ala Arg Tyr Val
240 245 250

60

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His Glu Ile Gly Pro Leu Tyr Leu Met Tyr Ser Leu Lys Ile Tyr Gln
 255 260 265 270
 Leu Pro Ile His Leu Phe Gly Phe Gly Val Phe Thr Val Leu Leu Pro
 275 280 285
 10 Ala Ile Ser Arg Cys Val Gln Arg Glu Asp His Glu Arg Gly Leu Lys
 290 295 300
 Leu Met Lys Phe Val Leu Thr Leu Thr Met Ser Val Met Ile Ile Met
 305 310 315
 Thr Ala Gly Leu Leu Leu Leu Ala Leu Pro Gly Val Arg Val Leu Tyr
 320 325 330
 Glu His Gly Leu Phe Pro Gln Ser Ala Val Tyr Ala Ile Val Arg Val
 335 340 345 350
 20 Leu Arg Gly Tyr Gly Ala Ser Ile Ile Pro Met Ala Leu Ala Pro Leu
 355 360 365
 Val Ser Val Leu Phe Tyr Ala Gln Arg Gln Tyr Ala Val Pro Leu Phe
 370 375 380
 Ile Gly Ile Gly Thr Ala Leu Ala Asn Ile Val Leu Ser Leu Val Leu
 385 390 395
 30 Gly Arg Trp Val Leu Lys Asp Val Ser Gly Ile Ser Tyr Ala Thr Ser
 400 405 410
 Ile Thr Ala Trp Val Gln Leu Tyr Phe Leu Trp Tyr Tyr Ser Ser Lys
 415 420 425 430
 Arg Leu Pro Met Tyr Ser Lys Leu Leu Trp Glu Ser Ile Arg Arg Ser
 435 440 445
 40 Ile Lys Val Met Gly Thr Thr Met Leu Ala Cys Met Ile Thr Leu Gly
 450 455 460
 Leu Asn Ile Leu Thr Gln Thr Thr Tyr Val Ile Phe Leu Asn Pro Leu
 465 470 475
 Thr Pro Leu Ala Trp Pro Leu Ser Ser Ile Thr Ala Gln Ala Ile Ala
 480 485 490
 Phe Leu Ser Glu Ser Cys Ile Phe Leu Ala Phe Leu Phe Gly Phe Ala
 495 500 505 510
 50 Lys Leu Leu Arg Val Glu Asp Leu Ile Asn Leu Ala Ser Phe Glu Tyr
 515 520 525
 Trp Arg Gly Gln Arg Gly Leu Leu Gln
 530 535

<210> 40

<211> 954

60 <212> PRT

<213> Chlamydia pneumoniae

66/83

<400> 40

Met Lys Thr Ser Arg Asn Lys Gln Cys Lys Ile Thr Asp Pro Leu Ser
 1 5 10 15

Lys Ser Ser Phe Phe Val Gly Ala Leu Ile Leu Gly Lys Thr Thr Ile
 20 25 30

10 Leu Leu Asn Ala Thr Pro Leu Ser Asp Tyr Phe Asp Asn Gln Ala Asn
 35 40 45

Gln Leu Thr Thr Leu Phe Pro Leu Ile Asp Thr Leu Thr Asn Met Thr
 50 55 60

Pro Tyr Ser His Arg Ala Thr Leu Phe Gly Val Arg Asp Asp Thr Asn
 65 70 75 80

20 Gln Asp Ile Val Leu Asp His Gln Asn Ser Ile Glu Ser Trp Phe Glu
 85 90 95

Asn Phe Ser Gln Asp Gly Gly Ala Leu Ser Cys Lys Ser Leu Ala Ile
 100 105 110

Thr Asn Thr Lys Asn Gln Ile Leu Phe Leu Asn Ser Phe Ala Ile Lys
 115 120 125

Arg Ala Gly Ala Met Tyr Val Asp Gly Asn Phe Asp Leu Ser Glu Asn
 130 135 140

30 His Gly Ser Ile Ile Phe Ser Gly Asn Leu Ser Phe Pro Asn Ala Ser
 145 150 155 160

Asn Phe Ala Asp Thr Cys Thr Gly Gly Ala Val Leu Cys Ser Lys Asn
 165 170 175

Val Thr Ile Ser Lys Asn Gln Gly Thr Ala Tyr Phe Ile Asn Asn Lys
 180 185 190

40 Ala Lys Ser Ser Gly Gly Ala Ile Gln Ala Ala Ile Ile Asn Ile Lys
 195 200 205

Asp Asn Thr Gly Pro Cys Leu Phe Phe Asn Asn Ala Ala Gly Gly Thr
 210 215 220

Ala Gly Gly Ala Leu Phe Ala Asn Ala Cys Arg Ile Glu Asn Asn Ser
 225 230 235 240

50 Gln Pro Ile Tyr Phe Leu Asn Asn Gln Ser Gly Leu Gly Gly Ala Ile
 245 250 255

Arg Val His Gln Glu Cys Ile Leu Thr Lys Asn Thr Gly Ser Val Ile
 260 265 270

Phe Asn Asn Asn Phe Ala Met Glu Ala Asp Ile Ser Ala Asn His Ser
 275 280 285

Ser Gly Gly Ala Ile Tyr Cys Ile Ser Cys Ser Ile Lys Asp Asn Pro
 290 295 300

60

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | Gly | Ile | Ala | Ala | Phe | Asp | Asn | Asn | Thr | Ala | Ala | Arg | Asp | Gly | Gly | Ala | |
| | 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| | Ile | Cys | Thr | Gln | Ser | Leu | Thr | Ile | Gln | Asp | Ser | Gly | Pro | Val | Tyr | Phe | |
| | | | | | 325 | | | | | 330 | | | | | | 335 | |
| 10 | Thr | Asn | Asn | Gln | Gly | Thr | Trp | Gly | Gly | Ala | Ile | Met | Leu | Arg | Gln | Asp | |
| | | | | 340 | | | | | 345 | | | | | | 350 | | |
| | Gly | Ala | Cys | Thr | Leu | Phe | Ala | Asp | Gln | Gly | Asp | Ile | Ile | Phe | Tyr | Asn | |
| | | | 355 | | | | | 360 | | | | | | 365 | | | |
| | Asn | Arg | His | Phe | Lys | Asp | Thr | Phe | Ser | Asn | His | Val | Ser | Val | Asn | Cys | |
| | | | | | | | 375 | | | | | 380 | | | | | |
| | Thr | Arg | Asn | Val | Ser | Leu | Thr | Val | Gly | Ala | Ser | Gln | Gly | His | Ser | Ala | |
| | 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| 20 | Thr | Phe | Tyr | Asp | Pro | Ile | Leu | Gln | Arg | Tyr | Thr | Ile | Gln | Asn | Ser | Ile | |
| | | | | | 405 | | | | | 410 | | | | | 415 | | |
| | Gln | Lys | Phe | Asn | Pro | Asn | Pro | Glu | His | Leu | Gly | Thr | Ile | Leu | Phe | Ser | |
| | | | | 420 | | | | | 425 | | | | | | 430 | | |
| | Ser | Thr | Tyr | Ile | Pro | Asp | Thr | Ser | Thr | Ser | Arg | Asp | Asp | Phe | Ile | Ser | |
| | | | 435 | | | | 440 | | | | | | 445 | | | | |
| 30 | His | Phe | Arg | Asn | His | Ile | Gly | Leu | Tyr | Asn | Gly | Thr | Leu | Ala | Leu | Glu | |
| | | 450 | | | | | 455 | | | | | 460 | | | | | |
| | Asp | Arg | Ala | Glu | Trp | Lys | Val | Tyr | Lys | Phe | Asp | Gln | Phe | Gly | Gly | Thr | |
| | 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
| | Leu | Arg | Leu | Gly | Ser | Arg | Ala | Val | Phe | Ser | Thr | Thr | Asp | Glu | Glu | Gln | |
| | | | | | 485 | | | | | 490 | | | | | 495 | | |
| 40 | Ser | Ser | Ser | Ser | Val | Gly | Ser | Val | Ile | Asn | Ile | Asn | Asn | Leu | Ala | Ile | |
| | | | | | 500 | | | | 505 | | | | | | 510 | | |
| | Asn | Leu | Pro | Ser | Ile | Leu | Gly | Asn | Arg | Val | Ala | Pro | Lys | Leu | Trp | Ile | |
| | | | 515 | | | | | 520 | | | | | 525 | | | | |
| | Arg | Pro | Thr | Gly | Ser | Ser | Ala | Pro | Tyr | Ser | Glu | Asp | Asn | Asn | Pro | Ile | |
| | | 530 | | | | | 535 | | | | | 540 | | | | | |
| | Ile | Asn | Leu | Ser | Gly | Pro | Leu | Ser | Leu | Leu | Asp | Asp | Glu | Asn | Leu | Asp | |
| | 545 | | | | | 550 | | | | | 555 | | | | | 560 | |
| 50 | Pro | Tyr | Asp | Thr | Ala | Asp | Leu | Ala | Gln | Pro | Ile | Ala | Glu | Val | Pro | Leu | |
| | | | | | 565 | | | | | 570 | | | | | 575 | | |
| | Leu | Tyr | Leu | Leu | Asp | Val | Thr | Ala | Lys | His | Ile | Asn | Thr | Asp | Asn | Phe | |
| | | | | | 580 | | | | 585 | | | | | 590 | | | |
| | Tyr | Pro | Glu | Gly | Leu | Asn | Thr | Thr | Gln | His | Tyr | Gly | Tyr | Gln | Gly | Val | |
| | | | 595 | | | | 600 | | | | | | 605 | | | | |
| 60 | Trp | Ser | Pro | Tyr | Trp | Ile | Glu | Thr | Ile | Thr | Thr | Ser | Asp | Thr | Ser | Ser | |
| | | | | | | | 610 | | | | | 620 | | | | | |

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | Glu | Asp | Thr | Val | Asn | Thr | Leu | His | Arg | Gln | Leu | Tyr | Gly | Asp | Trp | Thr | |
| | 625 | | | | | 630 | | | | | 635 | | | | | 640 | |
| | Pro | Thr | Gly | Tyr | Lys | Val | Asn | Pro | Glu | Asn | Lys | Gly | Asp | Ile | Ala | Leu | |
| | | | | | 645 | | | | | 650 | | | | | 655 | | |
| 10 | Ser | Ala | Phe | Trp | Gln | Ser | Phe | His | Asn | Leu | Phe | Ala | Thr | Leu | Arg | Tyr | |
| | | | | 660 | | | | | 665 | | | | | 670 | | | |
| | Gln | Thr | Gln | Gln | Gly | Gln | Ile | Ala | Pro | Thr | Ala | Ser | Gly | Glu | Ala | Thr | |
| | | | 675 | | | | | 680 | | | | | 685 | | | | |
| | Arg | Leu | Phe | Val | His | Gln | Asn | Ser | Asn | Asn | Asp | Ala | Lys | Gly | Phe | His | |
| | 690 | | | | | | 695 | | | | | 700 | | | | | |
| | Met | Glu | Ala | Thr | Gly | Tyr | Ser | Leu | Gly | Thr | Thr | Ser | Asn | Thr | Ala | Ser | |
| | 705 | | | | | 710 | | | | | 715 | | | | | 720 | |
| 20 | Asn | His | Ser | Phe | Gly | Val | Asn | Phe | Ser | Gln | Leu | Phe | Ser | Asn | Leu | Tyr | |
| | | | | | 725 | | | | | 730 | | | | | 735 | | |
| | Glu | Ser | His | Ser | Asp | Asn | Ser | Val | Ala | Ser | His | Thr | Thr | Thr | Val | Ala | |
| | | | | 740 | | | | | 745 | | | | | | 750 | | |
| | Leu | Gln | Ile | Asn | Asn | Pro | Trp | Leu | Gln | Glu | Arg | Phe | Ser | Thr | Ser | Ala | |
| | | | 755 | | | | | 760 | | | | | 765 | | | | |
| 30 | Ser | Leu | Ala | Tyr | Ser | Tyr | Ser | Asn | His | His | Ile | Lys | Ala | Ser | Gly | Tyr | |
| | | 770 | | | | | 775 | | | | | 780 | | | | | |
| | Ser | Gly | Lys | Ile | Gln | Thr | Glu | Gly | Lys | Cys | Tyr | Ser | Thr | Thr | Leu | Gly | |
| | 785 | | | | | 790 | | | | | 795 | | | | 800 | | |
| | Ala | Ala | Leu | Ser | Cys | Ser | Leu | Ser | Leu | Gln | Trp | Arg | Ser | Arg | Pro | Leu | |
| | | | | | 805 | | | | | 810 | | | | | 815 | | |
| 40 | His | Phe | Thr | Pro | Phe | Ile | Gln | Ala | Ile | Ala | Val | Arg | Ser | Asn | Gln | Thr | |
| | | | | 820 | | | | | 825 | | | | | 830 | | | |
| | Ala | Phe | Gln | Glu | Ser | Gly | Asp | Lys | Ala | Arg | Lys | Phe | Ser | Val | His | Lys | |
| | | | 835 | | | | | 840 | | | | | 845 | | | | |
| | Pro | Leu | Tyr | Asn | Leu | Thr | Val | Pro | Leu | Gly | Ile | Gln | Ser | Ala | Trp | Glu | |
| | | 850 | | | | | 855 | | | | | 860 | | | | | |
| | Ser | Lys | Phe | Arg | Leu | Pro | Thr | Tyr | Trp | Asn | Ile | Glu | Leu | Ala | Tyr | Gln | |
| | 865 | | | | | 870 | | | | | 875 | | | | | 880 | |
| 50 | Pro | Val | Leu | Tyr | Gln | Gln | Asn | Pro | Glu | Ile | Asn | Val | Ser | Leu | Glu | Ser | |
| | | | | | 885 | | | | | 890 | | | | | 895 | | |
| | Ser | Gly | Ser | Ser | Trp | Leu | Leu | Ser | Gly | Thr | Thr | Leu | Ala | Arg | Asn | Ala | |
| | | | | 900 | | | | | 905 | | | | | 910 | | | |
| | Ile | Ala | Phe | Lys | Gly | Arg | Asn | Gln | Ile | Phe | Ile | Phe | Pro | Lys | Leu | Ser | |
| | | | 915 | | | | | 920 | | | | | 925 | | | | |
| 60 | Val | Phe | Leu | Asp | Tyr | Gln | Gly | Ser | Val | Ser | Ser | Ser | Thr | Thr | Thr | His | |
| | | 930 | | | | | 935 | | | | | 940 | | | | | |

69/83

Tyr Leu His Ala Gly Thr Thr Phe Lys Phe
945 950

<210> 41
<211> 788
<212> PRT

10 <213> Chlamydia pneumoniae

<400> 41

Thr Gly Gly Ala Val Leu Cys Ser Lys Asn
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Val Thr Ile Ser Lys Asn Gln Gly Thr Ala Tyr Phe Ile Asn Asn Lys
15 20 25

20 Ala Lys Ser Ser Gly Gly Ala Ile Gln Ala Ala Ile Ile Asn Ile Lys
30 35 40

Asp Asn Thr Gly Pro Cys Leu Phe Phe Asn Asn Ala Ala Gly Gly Thr
45 50 55

Ala Gly Gly Ala Leu Phe Ala Asn Ala Cys Arg Ile Glu Asn Asn Ser
60 65 70

30 Gln Pro Ile Tyr Phe Leu Asn Asn Gln Ser Gly Leu Gly Gly Ala Ile
75 80 85 90

Arg Val His Gln Glu Cys Ile Leu Thr Lys Asn Thr Gly Ser Val Ile
95 100 105

Phe Asn Asn Asn Phe Ala Met Glu Ala Asp Ile Ser Ala Asn His Ser
110 115 120

Ser Gly Gly Ala Ile Tyr Cys Ile Ser Cys Ser Ile Lys Asp Asn Pro
125 130 135

40 Gly Ile Ala Ala Phe Asp Asn Asn Thr Ala Ala Arg Asp Gly Gly Ala
140 145 150

Ile Cys Thr Gln Ser Leu Thr Ile Gln Asp Ser Gly Pro Val Tyr Phe
155 160 165 170

Thr Asn Asn Gln Gly Thr Trp Gly Gly Ala Ile Met Leu Arg Gln Asp
175 180 185

50 Gly Ala Cys Thr Leu Phe Ala Asp Gln Gly Asp Ile Ile Phe Tyr Asn
190 195 200

Asn Arg His Phe Lys Asp Thr Phe Ser Asn His Val Ser Val Asn Cys
205 210 215

Thr Arg Asn Val Ser Leu Thr Val Gly Ala Ser Gln Gly His Ser Ala
220 225 230

Thr Phe Tyr Asp Pro Ile Leu Gln Arg Tyr Thr Ile Gln Asn Ser Ile
235 240 245 250

60

70/83

| | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | Gln | Lys | Phe | Asn | Pro | Asn | Pro | Glu | His | Leu | Gly | Thr | Ile | Leu | Phe | Ser |
| | | | | | 255 | | | | | 260 | | | | | 265 | |
| | Ser | Thr | Tyr | Ile | Pro | Asp | Thr | Ser | Thr | Ser | Arg | Asp | Asp | Phe | Ile | Ser |
| | | | | 270 | | | | | 275 | | | | | 280 | | |
| 10 | His | Phe | Arg | Asn | His | Ile | Gly | Leu | Tyr | Asn | Gly | Thr | Leu | Ala | Leu | Glu |
| | | | 285 | | | | | 290 | | | | | 295 | | | |
| | Asp | Arg | Ala | Glu | Trp | Lys | Val | Tyr | Lys | Phe | Asp | Gln | Phe | Gly | Gly | Thr |
| | | 300 | | | | | 305 | | | | | 310 | | | | |
| | Leu | Arg | Leu | Gly | Ser | Arg | Ala | Val | Phe | Ser | Thr | Thr | Asp | Glu | Glu | Gln |
| | 315 | | | | | 320 | | | | | 325 | | | | | 330 |
| | Ser | Ser | Ser | Ser | Val | Gly | Ser | Val | Ile | Asn | Ile | Asn | Asn | Leu | Ala | Ile |
| | | | | | 335 | | | | | 340 | | | | | 345 | |
| 20 | Asn | Leu | Pro | Ser | Ile | Leu | Gly | Asn | Arg | Val | Ala | Pro | Lys | Leu | Trp | Ile |
| | | | | 350 | | | | | 355 | | | | | 360 | | |
| | Arg | Pro | Thr | Gly | Ser | Ser | Ala | Pro | Tyr | Ser | Glu | Asp | Asn | Asn | Pro | Ile |
| | | | 365 | | | | | 370 | | | | | 375 | | | |
| | Ile | Asn | Leu | Ser | Gly | Pro | Leu | Ser | Leu | Leu | Asp | Asp | Glu | Asn | Leu | Asp |
| | | 380 | | | | | 385 | | | | | 390 | | | | |
| 30 | Pro | Tyr | Asp | Thr | Ala | Asp | Leu | Ala | Gln | Pro | Ile | Ala | Glu | Val | Pro | Leu |
| | 395 | | | | | 400 | | | | | 405 | | | | | 410 |
| | Leu | Tyr | Leu | Leu | Asp | Val | Thr | Ala | Lys | His | Ile | Asn | Thr | Asp | Asn | Phe |
| | | | | | 415 | | | | | 420 | | | | | 425 | |
| | Tyr | Pro | Glu | Gly | Leu | Asn | Thr | Thr | Gln | His | Tyr | Gly | Tyr | Gln | Gly | Val |
| | | | | 430 | | | | | 435 | | | | | 440 | | |
| | Trp | Ser | Pro | Tyr | Trp | Ile | Glu | Thr | Ile | Thr | Thr | Ser | Asp | Thr | Ser | Ser |
| 40 | | | 445 | | | | | 450 | | | | | 455 | | | |
| | Glu | Asp | Thr | Val | Asn | Thr | Leu | His | Arg | Gln | Leu | Tyr | Gly | Asp | Trp | Thr |
| | 460 | | | | | | 465 | | | | | 470 | | | | |
| | Pro | Thr | Gly | Tyr | Lys | Val | Asn | Pro | Glu | Asn | Lys | Gly | Asp | Ile | Ala | Leu |
| | 475 | | | | | 480 | | | | | 485 | | | | | 490 |
| | Ser | Ala | Phe | Trp | Gln | Ser | Phe | His | Asn | Leu | Phe | Ala | Thr | Leu | Arg | Tyr |
| | | | | | 495 | | | | | 500 | | | | | 505 | |
| 50 | Gln | Thr | Gln | Gln | Gly | Gln | Ile | Ala | Pro | Thr | Ala | Ser | Gly | Glu | Ala | Thr |
| | | | | 510 | | | | | 515 | | | | | 520 | | |
| | Arg | Leu | Phe | Val | His | Gln | Asn | Ser | Asn | Asn | Asp | Ala | Lys | Gly | Phe | His |
| | | | 525 | | | | | 530 | | | | | 535 | | | |
| | Met | Glu | Ala | Thr | Gly | Tyr | Ser | Leu | Gly | Thr | Thr | Ser | Asn | Thr | Ala | Ser |
| | | 540 | | | | | 545 | | | | | 550 | | | | |
| 60 | Asn | His | Ser | Phe | Gly | Val | Asn | Phe | Ser | Gln | Leu | Phe | Ser | Asn | Leu | Tyr |
| | 555 | | | | | 560 | | | | | 565 | | | | | 570 |

71/83

10

20

30

40

50

60

72/83

| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | Val | Ser | Lys | Thr | Pro | Pro | Lys | Phe | Leu | Phe | Tyr | Leu | Gly | Asn | Phe | Thr | |
| | 50 | | | | | | 55 | | | | | 60 | | | | | |
| | Ala | Cys | Met | Phe | Gly | Met | Thr | Pro | Ala | Val | Tyr | Ser | Leu | Gln | Thr | Asp | |
| | 65 | | | | | 70 | | | | | 75 | | | | | 80 | |
| 10 | Ser | Leu | Glu | Lys | Phe | Ala | Leu | Glu | Arg | Asp | Glu | Glu | Phe | Arg | Thr | Ser | |
| | | | | | 85 | | | | | 90 | | | | | 95 | | |
| | Phe | Pro | Leu | Leu | Asp | Ser | Leu | Ser | Thr | Leu | Thr | Gly | Phe | Ser | Pro | Ile | |
| | | | | 100 | | | | | 105 | | | | | 110 | | | |
| | Thr | Thr | Phe | Val | Gly | Asn | Arg | His | Asn | Ser | Ser | Gln | Asp | Ile | Val | Leu | |
| | | | | 115 | | | | 120 | | | | | 125 | | | | |
| | Ser | Asn | Tyr | Lys | Ser | Ile | Asp | Asn | Ile | Leu | Leu | Leu | Trp | Thr | Ser | Ala | |
| 20 | | 130 | | | | | 135 | | | | | 140 | | | | | |
| | Gly | Gly | Ala | Val | Ser | Cys | Asn | Asn | Phe | Leu | Leu | Ser | Asn | Val | Glu | Asp | |
| | 145 | | | | | 150 | | | | | 155 | | | | | 160 | |
| | His | Ala | Phe | Phe | Ser | Lys | Asn | Leu | Ala | Ile | Gly | Thr | Gly | Gly | Ala | Ile | |
| | | | | | 165 | | | | | 170 | | | | | 175 | | |
| | Ala | Cys | Gln | Gly | Ala | Cys | Thr | Ile | Thr | Lys | Asn | Arg | Gly | Pro | Leu | Ile | |
| | | | | 180 | | | | | 185 | | | | | 190 | | | |
| 30 | Phe | Phe | Ser | Asn | Arg | Gly | Leu | Asn | Asn | Ala | Ser | Thr | Gly | Gly | Glu | Thr | |
| | | | 195 | | | | | 200 | | | | | 205 | | | | |
| | Arg | Gly | Gly | Ala | Ile | Ala | Cys | Asn | Gly | Asp | Phe | Thr | Ile | Ser | Gln | Asn | |
| | | 210 | | | | | 215 | | | | | 220 | | | | | |
| | Gln | Gly | Thr | Phe | Tyr | Phe | Val | Asn | Asn | Ser | Val | Asn | Asn | Trp | Gly | Gly | |
| | 225 | | | | | 230 | | | | | 235 | | | | | 240 | |
| | Ala | Leu | Ser | Thr | Asn | Gly | His | Cys | Arg | Ile | Gln | Ser | Asn | Arg | Ala | Pro | |
| 40 | | | | | 245 | | | | | 250 | | | | | 255 | | |
| | Leu | Leu | Phe | Phe | Asn | Asn | Thr | Ala | Pro | Ser | Gly | Gly | Gly | Ala | Leu | Arg | |
| | | | | 260 | | | | | 265 | | | | | 270 | | | |
| | Ser | Glu | Asn | Thr | Thr | Ile | Ser | Asp | Asn | Thr | Arg | Pro | Ile | Tyr | Phe | Lys | |
| | | | 275 | | | | | 280 | | | | | 285 | | | | |
| | Asn | Asn | Cys | Gly | Asn | Asn | Gly | Gly | Ala | Ile | Gln | Thr | Ser | Val | Thr | Val | |
| 50 | | 290 | | | | | 295 | | | | | 300 | | | | | |
| | Ala | Ile | Lys | Asn | Asn | Ser | Gly | Ser | Val | Ile | Phe | Asn | Asn | Asn | Thr | Ala | |
| | 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| | Leu | Ser | Gly | Ser | Ile | Asn | Ser | Gly | Asn | Gly | Ser | Gly | Gly | Ala | Ile | Tyr | |
| | | | | | 325 | | | | | 330 | | | | | 335 | | |
| | Thr | Thr | Asn | Leu | Ser | Ile | Asp | Asp | Asn | Pro | Gly | Thr | Ile | Leu | Phe | Asn | |
| | | | | 340 | | | | | 345 | | | | | 350 | | | |
| 60 | Asn | Asn | Tyr | Cys | Ile | Arg | Asp | Gly | Gly | Ala | Ile | Cys | Thr | Gln | Phe | Leu | |
| | | | 355 | | | | | 360 | | | | | 365 | | | | |

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | Thr | Ile | Lys | Asn | Ser | Gly | His | Val | Tyr | Phe | Thr | Asn | Asn | Gln | Gly | Asn | |
| | 370 | | | | | | 375 | | | | | 380 | | | | | |
| | Trp | Gly | Gly | Ala | Leu | Met | Leu | Leu | Gln | Asp | Ser | Thr | Cys | Leu | Leu | Phe | |
| | 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| 10 | Ala | Glu | Gln | Gly | Asn | Ile | Ala | Phe | Gln | Asn | Asn | Glu | Val | Phe | Leu | Thr | |
| | | | | | 405 | | | | | 410 | | | | | 415 | | |
| | Thr | Phe | Gly | Arg | Tyr | Asn | Ala | Ile | His | Cys | Thr | Pro | Asn | Ser | Asn | Leu | |
| | | | | 420 | | | | | 425 | | | | | 430 | | | |
| | Gln | Leu | Gly | Ala | Asn | Lys | Gly | Tyr | Thr | Thr | Ala | Phe | Phe | Asp | Pro | Ile | |
| | | | 435 | | | | | 440 | | | | | 445 | | | | |
| 20 | Glu | His | Gln | His | Pro | Thr | Thr | Asn | Pro | Leu | Ile | Phe | Asn | Pro | Asn | Ala | |
| | 450 | | | | | | 455 | | | | | 460 | | | | | |
| | Asn | His | Gln | Gly | Thr | Ile | Leu | Phe | Ser | Ser | Ala | Tyr | Ile | Pro | Glu | Ala | |
| | 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
| | Ser | Asp | Tyr | Glu | Asn | Asn | Phe | Ile | Ser | Ser | Ser | Lys | Asn | Thr | Ser | Glu | |
| | | | | | 485 | | | | | 490 | | | | | 495 | | |
| | Leu | Arg | Asn | Gly | Val | Leu | Ser | Ile | Glu | Asp | Arg | Ala | Gly | Trp | Gln | Phe | |
| | | | | 500 | | | | | 505 | | | | | 510 | | | |
| 30 | Tyr | Lys | Phe | Thr | Gln | Lys | Gly | Gly | Ile | Leu | Lys | Leu | Gly | His | Ala | Ala | |
| | | | 515 | | | | | 520 | | | | | 525 | | | | |
| | Ser | Ile | Ala | Thr | Thr | Ala | Asn | Ser | Glu | Thr | Pro | Ser | Thr | Ser | Val | Gly | |
| | 530 | | | | | | 535 | | | | | 540 | | | | | |
| | Ser | Gln | Val | Ile | Ile | Asn | Asn | Leu | Ala | Ile | Asn | Leu | Pro | Ser | Ile | Leu | |
| | 545 | | | | | 550 | | | | | 555 | | | | | 560 | |
| 40 | Ala | Lys | Gly | Lys | Ala | Pro | Thr | Leu | Trp | Ile | Arg | Pro | Leu | Gln | Ser | Ser | |
| | | | | | 565 | | | | | 570 | | | | | 575 | | |
| | Ala | Pro | Phe | Thr | Glu | Asp | Asn | Asn | Pro | Thr | Ile | Thr | Leu | Ser | Gly | Pro | |
| | | | | 580 | | | | | 585 | | | | | 590 | | | |
| | Leu | Thr | Leu | Leu | Asn | Glu | Glu | Asn | Arg | Asp | Pro | Tyr | Asp | Ser | Ile | Asp | |
| | | | 595 | | | | | 600 | | | | | 605 | | | | |
| 50 | Leu | Ser | Glu | Pro | Leu | Gln | Asn | Ile | His | Leu | Leu | Ser | Leu | Ser | Asp | Val | |
| | 610 | | | | | | 615 | | | | | 620 | | | | | |
| | Thr | Ala | Arg | His | Ile | Asn | Thr | Asp | Asn | Phe | His | Pro | Glu | Ser | Leu | Asn | |
| | 625 | | | | | 630 | | | | | 635 | | | | | 640 | |
| | Ala | Thr | Glu | His | Tyr | Gly | Tyr | Gln | Gly | Ile | Trp | Ser | Pro | Tyr | Trp | Val | |
| | | | | | 645 | | | | | 650 | | | | | 655 | | |
| | Glu | Thr | Ile | Thr | Thr | Asn | Asn | Ala | Ser | Ile | Glu | Thr | Ala | Asn | Thr | | |
| | | | | 660 | | | | 665 | | | | | 670 | | | | |
| 60 | Leu | Tyr | Arg | Ala | Leu | Tyr | Ala | Asn | Trp | Thr | Pro | Leu | Gly | Tyr | Lys | Val | |
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74 / 83

60

75/83

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 <211> 931
 <212> PRT
 <213> Chlamydia pneumoniae

<400> 43

| | | | | | | | | | | | | | | | | | | | | |
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| 10 | Met | Leu | Leu | Pro | Phe | Thr | Phe | Val | Leu | Ala | Asn | Glu | Gly | Leu | Gln | Leu | 1 | 5 | 10 | 15 |
| | Pro | Leu | Glu | Thr | Tyr | Ile | Thr | Leu | Ser | Pro | Glu | Tyr | Gln | Ala | Ala | Pro | 20 | 25 | 30 | |
| | Gln | Val | Gly | Phe | Thr | His | Asn | Gln | Asn | Gln | Asp | Leu | Ala | Ile | Val | Gly | 35 | 40 | 45 | |
| | Asn | His | Asn | Asp | Phe | Ile | Leu | Asp | Tyr | Lys | Tyr | Tyr | Arg | Ser | Asn | Gly | 50 | 55 | 60 | |
| 20 | Gly | Ala | Leu | Thr | Cys | Lys | Asn | Leu | Leu | Ile | Ser | Glu | Asn | Ile | Gly | Asn | 65 | 70 | 75 | 80 |
| | Val | Phe | Phe | Glu | Lys | Asn | Val | Cys | Pro | Asn | Ser | Gly | Gly | Ala | Ile | Tyr | 85 | 90 | 95 | |
| | Ala | Ala | Gln | Asn | Cys | Thr | Ile | Ser | Lys | Asn | Gln | Asn | Tyr | Ala | Phe | Thr | 100 | 105 | 110 | |
| 30 | Thr | Asn | Leu | Val | Ser | Asp | Asn | Pro | Thr | Ala | Thr | Ala | Gly | Ser | Leu | Leu | 115 | 120 | 125 | |
| | Gly | Gly | Ala | Leu | Phe | Ala | Ile | Asn | Cys | Ser | Ile | Thr | Asn | Asn | Leu | Gly | 130 | 135 | 140 | |
| | Gln | Gly | Thr | Phe | Val | Asp | Asn | Leu | Ala | Leu | Asn | Lys | Gly | Gly | Ala | Leu | 145 | 150 | 155 | 160 |
| 40 | Tyr | Thr | Glu | Thr | Asn | Leu | Ser | Ile | Lys | Asp | Asn | Lys | Gly | Pro | Ile | Ile | 165 | 170 | 175 | |
| | Ile | Lys | Gln | Asn | Arg | Ala | Leu | Asn | Ser | Asp | Ser | Leu | Gly | Gly | Gly | Ile | 180 | 185 | 190 | |
| | Tyr | Ser | Gly | Asn | Ser | Leu | Asn | Ile | Glu | Gly | Asn | Ser | Gly | Ala | Ile | Gln | 195 | 200 | 205 | |
| 50 | Ile | Thr | Ser | Asn | Ser | Ser | Gly | Ser | Gly | Gly | Gly | Ile | Phe | Ser | Thr | Gln | 210 | 215 | 220 | |
| | Thr | Leu | Thr | Ile | Ser | Ser | Asn | Lys | Lys | Leu | Ile | Glu | Ile | Ser | Glu | Asn | 225 | 230 | 235 | 240 |
| | Ser | Ala | Phe | Ala | Asn | Asn | Tyr | Gly | Ser | Asn | Phe | Asn | Pro | Gly | Gly | Gly | 245 | 250 | 255 | |
| | Gly | Leu | Thr | Thr | Thr | Phe | Cys | Thr | Ile | Leu | Asn | Asn | Arg | Glu | Gly | Val | 260 | 265 | 270 | |
| 60 | Leu | Phe | Asn | Asn | Asn | Gln | Ser | Gln | Ser | Asn | Gly | Gly | Ala | Ile | His | Ala | 275 | 280 | 285 | |

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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | Lys | Ser | Ile | Ile | Ile | Lys | Glu | Asn | Gly | Pro | Val | Tyr | Phe | Leu | Asn | Asn | |
| | 290 | | | | | | 295 | | | | | 300 | | | | | |
| | Thr | Ala | Thr | Arg | Gly | Gly | Ala | Leu | Leu | Asn | Leu | Ser | Ala | Gly | Ser | Gly | |
| | 305 | | | | 310 | | | | | 315 | | | | | | 320 | |
| 10 | Asn | Gly | Ser | Phe | Ile | Leu | Ser | Ala | Asp | Asn | Gly | Asp | Ile | Ile | Phe | Asn | |
| | | | | | 325 | | | | | 330 | | | | | 335 | | |
| | Asn | Asn | Thr | Ala | Ser | Lys | His | Ala | Leu | Asn | Pro | Pro | Tyr | Arg | Asn | Ala | |
| | | | | 340 | | | | | 345 | | | | | 350 | | | |
| | Ile | His | Ser | Thr | Pro | Asn | Met | Asn | Leu | Gln | Ile | Gly | Ala | Arg | Pro | Gly | |
| | | | | 355 | | | | 360 | | | | | 365 | | | | |
| 20 | Tyr | Arg | Val | Leu | Phe | Tyr | Asp | Pro | Ile | Glu | His | Glu | Leu | Pro | Ser | Ser | |
| | 370 | | | | | | 375 | | | | | 380 | | | | | |
| | Phe | Pro | Ile | Leu | Phe | Asn | Phe | Glu | Thr | Gly | His | Thr | Gly | Thr | Val | Leu | |
| | 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| | Phe | Ser | Gly | Glu | His | Val | His | Gln | Asn | Phe | Thr | Asp | Glu | Met | Asn | Phe | |
| | | | | | 405 | | | | | 410 | | | | | 415 | | |
| | Phe | Ser | Tyr | Leu | Arg | Asn | Thr | Ser | Glu | Leu | Arg | Gln | Gly | Val | Leu | Ala | |
| | | | | 420 | | | | | 425 | | | | | 430 | | | |
| 30 | Val | Glu | Asp | Gly | Ala | Gly | Leu | Ala | Cys | Tyr | Lys | Phe | Phe | Gln | Arg | Gly | |
| | | | 435 | | | | | 440 | | | | | 445 | | | | |
| | Gly | Thr | Leu | Leu | Leu | Gly | Gln | Gly | Ala | Val | Ile | Thr | Thr | Ala | Gly | Thr | |
| | | | 450 | | | | 455 | | | | | | 460 | | | | |
| | Ile | Pro | Thr | Pro | Ser | Ser | Thr | Pro | Thr | Thr | Val | Gly | Ser | Thr | Ile | Thr | |
| | 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
| 40 | Leu | Asn | His | Ile | Ala | Ile | Asp | Leu | Pro | Ser | Ile | Leu | Ser | Phe | Gln | Ala | |
| | | | | | 485 | | | | 490 | | | | | | 495 | | |
| | Gln | Ala | Pro | Lys | Ile | Trp | Ile | Tyr | Pro | Thr | Lys | Thr | Gly | Ser | Thr | Tyr | |
| | | | | 500 | | | | | 505 | | | | | 510 | | | |
| | Thr | Glu | Asp | Ser | Asn | Pro | Thr | Ile | Thr | Ile | Ser | Gly | Thr | Leu | Thr | Leu | |
| | | | 515 | | | | | 520 | | | | | 525 | | | | |
| 50 | Arg | Asn | Ser | Asn | Asn | Glu | Asp | Pro | Tyr | Asp | Ser | Leu | Asp | Leu | Ser | His | |
| | 530 | | | | | | 535 | | | | | 540 | | | | | |
| | Ser | Leu | Glu | Lys | Val | Pro | Leu | Leu | Tyr | Ile | Val | Asp | Val | Ala | Ala | Gln | |
| | 545 | | | | | 550 | | | | | 555 | | | | | 560 | |
| | Lys | Ile | Asn | Ser | Ser | Gln | Leu | Asp | Leu | Ser | Thr | Leu | Asn | Ser | Gly | Glu | |
| | | | | | 565 | | | | | 570 | | | | | 575 | | |
| | His | Tyr | Gly | Tyr | Gln | Gly | Ile | Trp | Ser | Thr | Tyr | Trp | Val | Glu | Thr | Thr | |
| | | | | 580 | | | | | 585 | | | | | 590 | | | |
| 60 | Thr | Ile | Thr | Asn | Pro | Thr | Ser | Leu | Leu | Gly | Ala | Asn | Thr | Lys | His | Lys | |
| | | | 595 | | | | | 600 | | | | | 605 | | | | |

77/83

| | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | Leu | Leu | Tyr | Ala | Asn | Trp | Ser | Pro | Leu | Gly | Tyr | Arg | Pro | His | Pro | Glu |
| | 610 | | | | | | 615 | | | | | 620 | | | | |
| | Arg | Arg | Gly | Glu | Phe | Ile | Thr | Asn | Ala | Leu | Trp | Gln | Ser | Ala | Tyr | Thr |
| | 625 | | | | | 630 | | | | | 635 | | | | | 640 |
| 10 | Ala | Leu | Ala | Gly | Leu | His | Ser | Leu | Ser | Ser | Trp | Asp | Glu | Glu | Lys | Gly |
| | | | | | 645 | | | | | 650 | | | | | 655 | |
| | His | Ala | Ala | Ser | Leu | Gln | Gly | Ile | Gly | Leu | Leu | Val | His | Gln | Lys | Asp |
| | | | | 660 | | | | | 665 | | | | | 670 | | |
| | Lys | Asn | Gly | Phe | Lys | Gly | Phe | Arg | Ser | His | Met | Thr | Gly | Tyr | Ser | Ala |
| | | | 675 | | | | | 680 | | | | | 685 | | | |
| | Thr | Thr | Glu | Ala | Thr | Ser | Ser | Gln | Ser | Pro | Asn | Phe | Ser | Leu | Gly | Phe |
| | | 690 | | | | | 695 | | | | | 700 | | | | |
| 20 | Ala | Gln | Phe | Phe | Ser | Lys | Ala | Lys | Glu | His | Glu | Ser | Gln | Asn | Ser | Thr |
| | 705 | | | | | 710 | | | | | 715 | | | | | 720 |
| | Ser | Ser | His | His | Tyr | Phe | Ser | Gly | Met | Cys | Ile | Ala | Lys | Tyr | Ser | Leu |
| | | | | | 725 | | | | | 730 | | | | | 735 | |
| | Gln | Arg | Val | Ile | Arg | Leu | Ser | Val | Ser | Leu | Ala | Tyr | Met | Phe | Thr | Ser |
| | | | | 740 | | | | | 745 | | | | | 750 | | |
| 30 | Glu | His | Thr | His | Thr | Met | Tyr | Gln | Gly | Leu | Leu | Glu | Gly | Asn | Ser | Gln |
| | | | 755 | | | | | 760 | | | | | 765 | | | |
| | Gly | Ser | Phe | His | Asn | His | Thr | Leu | Ala | Gly | Ala | Leu | Ser | Cys | Val | Phe |
| | | 770 | | | | | 775 | | | | | 780 | | | | |
| | Leu | Pro | Gln | Pro | His | Gly | Glu | Ser | Leu | Gln | Ile | Tyr | Pro | Phe | Ile | Thr |
| | 785 | | | | | 790 | | | | | 795 | | | | | 800 |
| 40 | Ala | Leu | Ala | Ile | Arg | Gly | Asn | Leu | Ala | Ala | Phe | Gln | Glu | Ser | Gly | Asp |
| | | | | | 805 | | | | | 810 | | | | | 815 | |
| | His | Ala | Arg | Glu | Phe | Ser | Leu | His | Arg | Pro | Leu | Thr | Asp | Val | Ser | Leu |
| | | | | 820 | | | | | 825 | | | | | 830 | | |
| | Pro | Val | Gly | Ile | Arg | Ala | Ser | Trp | Lys | Asn | His | His | Arg | Val | Pro | Leu |
| | | | 835 | | | | | 840 | | | | | 845 | | | |
| | Val | Trp | Leu | Thr | Glu | Ile | Ser | Tyr | Arg | Ser | Thr | Leu | Tyr | Arg | Gln | Asp |
| | | 850 | | | | | 855 | | | | | 860 | | | | |
| 50 | Pro | Glu | Leu | His | Ser | Lys | Leu | Leu | Ile | Ser | Gln | Gly | Thr | Trp | Thr | Thr |
| | 865 | | | | | 870 | | | | | 875 | | | | | 880 |
| | Gln | Ala | Thr | Pro | Val | Thr | Tyr | Asn | Ala | Leu | Gly | Ile | Lys | Val | Lys | Asn |
| | | | | | 885 | | | | | 890 | | | | | 895 | |
| | Thr | Met | Gln | Val | Phe | Pro | Lys | Val | Thr | Leu | Ser | Leu | Asp | Tyr | Ser | Ala |
| | | | | 900 | | | | | 905 | | | | | 910 | | |
| 60 | Asp | Ile | Ser | Ser | Ser | Thr | Leu | Ser | His | Tyr | Leu | Asn | Val | Ala | Ser | Arg |
| | | | 915 | | | | | 920 | | | | | 925 | | | |

78/83

Met Arg Phe
930

<210> 44
<211> 978
<212> PRT

10 <213> Chlamydia pneumoniae

<400> 44

Met Pro Leu Ser Phe Lys Ser Ser Ser Phe Cys Leu Leu Ala Cys Leu
1 5 10 15

Cys Ser Ala Ser Cys Ala Phe Ala Glu Thr Arg Leu Gly Gly Asn Phe
20 25 30

20 Val Pro Pro Ile Thr Asn Gln Gly Glu Glu Ile Leu Leu Thr Ser Asp
35 40 45

Phe Val Cys Ser Asn Phe Leu Gly Ala Ser Phe Ser Ser Ser Phe Ile
50 55 60

Asn Ser Ser Ser Asn Leu Ser Leu Leu Gly Lys Gly Leu Ser Leu Thr
65 70 75 80

30 Phe Thr Ser Cys Gln Ala Pro Thr Asn Ser Asn Tyr Ala Leu Leu Ser
85 90 95

Ala Ala Glu Thr Leu Thr Phe Lys Asn Phe Ser Ser Ile Asn Phe Thr
100 105 110

Gly Asn Gln Ser Thr Gly Leu Gly Gly Leu Ile Tyr Gly Lys Asp Ile
115 120 125

Val Phe Gln Ser Ile Lys Asp Leu Ile Phe Thr Thr Asn Arg Val Ala
130 135 140

40 Tyr Ser Pro Ala Ser Val Thr Thr Ser Ala Thr Pro Ala Ile Thr Thr
145 150 155 160

Val Thr Thr Gly Ala Ser Ala Leu Gln Pro Thr Asp Ser Leu Thr Val
165 170 175

Glu Asn Ile Ser Gln Ser Ile Lys Phe Phe Gly Asn Leu Ala Asn Phe
180 185 190

50 Gly Ser Ala Ile Ser Ser Ser Pro Thr Ala Val Val Lys Phe Ile Asn
195 200 205

Asn Thr Ala Thr Met Ser Phe Ser His Asn Phe Thr Ser Ser Gly Gly
210 215 220

Gly Val Ile Tyr Gly Gly Ser Ser Leu Leu Phe Glu Asn Asn Ser Gly
225 230 235 240

Cys Ile Ile Phe Thr Ala Asn Ser Cys Val Asn Ser Leu Lys Gly Val
245 250 255

60

79/83

| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | Thr | Pro | Ser | Ser | Gly | Thr | Tyr | Ala | Leu | Gly | Ser | Gly | Gly | Ala | Ile | Cys | |
| | | | | 260 | | | | | 265 | | | | | | 270 | | |
| | Ile | Pro | Thr | Gly | Thr | Phe | Glu | Leu | Lys | Asn | Asn | Gln | Gly | Lys | Cys | Thr | |
| | | | 275 | | | | | 280 | | | | | 285 | | | | |
| 10 | Phe | Ser | Tyr | Asn | Gly | Thr | Pro | Asn | Asp | Ala | Gly | Ala | Ile | Tyr | Ala | Glu | |
| | | 290 | | | | | 295 | | | | | 300 | | | | | |
| | Thr | Cys | Asn | Ile | Val | Gly | Asn | Gln | Gly | Ala | Leu | Leu | Leu | Asp | Ser | Asn | |
| | 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| | Thr | Ala | Ala | Arg | Asn | Gly | Gly | Ala | Ile | Cys | Ala | Lys | Val | Leu | Asn | Ile | |
| | | | | | 325 | | | | | 330 | | | | | | 335 | |
| | Gln | Gly | Arg | Gly | Pro | Ile | Glu | Phe | Ser | Arg | Asn | Arg | Ala | Glu | Lys | Gly | |
| | | | | 340 | | | | | 345 | | | | | 350 | | | |
| 20 | Gly | Ala | Ile | Phe | Ile | Gly | Pro | Ser | Val | Gly | Asp | Pro | Ala | Lys | Gln | Thr | |
| | | | 355 | | | | | 360 | | | | | 365 | | | | |
| | Ser | Thr | Leu | Thr | Ile | Leu | Ala | Ser | Glu | Gly | Asp | Ile | Ala | Phe | Gln | Gly | |
| | | 370 | | | | | 375 | | | | | | 380 | | | | |
| | Asn | Met | Leu | Asn | Thr | Lys | Pro | Gly | Ile | Arg | Asn | Ala | Ile | Thr | Val | Glu | |
| | 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| 30 | Ala | Gly | Gly | Glu | Ile | Val | Ser | Leu | Ser | Ala | Gln | Gly | Gly | Ser | Arg | Leu | |
| | | | | | 405 | | | | | 410 | | | | | | | |
| | Val | Phe | Tyr | Asp | Pro | Ile | Thr | His | Ser | Leu | Pro | Thr | Thr | Ser | Pro | Ser | |
| | | | | 420 | | | | | 425 | | | | | 430 | | | |
| | Asn | Lys | Asp | Ile | Thr | Ile | Asn | Ala | Asn | Gly | Ala | Ser | Gly | Ser | Val | Val | |
| | | | 435 | | | | | 440 | | | | | 445 | | | | |
| 40 | Phe | Thr | Ser | Lys | Gly | Leu | Ser | Ser | Thr | Glu | Leu | Leu | Leu | Pro | Ala | Asn | |
| | 450 | | | | | | 455 | | | | | 460 | | | | | |
| | Thr | Thr | Thr | Ile | Leu | Leu | Gly | Thr | Val | Lys | Ile | Ala | Ser | Gly | Glu | Leu | |
| | 465 | | | | 470 | | | | | | 475 | | | | | 480 | |
| | Lys | Ile | Thr | Asp | Asn | Ala | Val | Val | Asn | Val | Ala | Gly | Phe | Ala | Thr | Gln | |
| | | | | | 485 | | | | | 490 | | | | | 495 | | |
| | Gly | Ser | Gly | Gln | Leu | Thr | Leu | Gly | Ser | Gly | Gly | Thr | Leu | Gly | Leu | Ala | |
| | | | | 500 | | | | | 505 | | | | | 510 | | | |
| 50 | Thr | Pro | Thr | Gly | Ala | Pro | Ala | Ala | Val | Asp | Phe | Thr | Ile | Gly | Lys | Leu | |
| | | | 515 | | | | | 520 | | | | | | 525 | | | |
| | Ala | Phe | Asp | Pro | Phe | Ser | Phe | Leu | Lys | Arg | Asp | Phe | Val | Ser | Ala | Ser | |
| | | 530 | | | | | 535 | | | | | 540 | | | | | |
| | Val | Asn | Ala | Gly | Thr | Lys | Asn | Val | Thr | Leu | Thr | Gly | Ala | Leu | Val | Leu | |
| | 545 | | | | | 550 | | | | | 555 | | | | | 560 | |
| 60 | Asp | Glu | His | Asp | Val | Thr | Asp | Leu | Tyr | Asp | Met | Val | Ser | Leu | Gln | Ser | |
| | | | | | 565 | | | | | 570 | | | | | 575 | | |

80/83

| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | Pro | Val | Ala | Ile | Pro | Ile | Ala | Val | Phe | Lys | Gly | Ala | Thr | Val | Thr | Lys | |
| | | | | 580 | | | | | 585 | | | | | 590 | | | |
| | Thr | Gly | Phe | Pro | Asp | Gly | Glu | Ile | Ala | Thr | Pro | Ser | His | Tyr | Gly | Tyr | |
| | | | 595 | | | | | 600 | | | | | 605 | | | | |
| 10 | Gln | Gly | Lys | Trp | Ser | Tyr | Thr | Trp | Ser | Arg | Pro | Leu | Leu | Ile | Pro | Ala | |
| | | 610 | | | | | 615 | | | | | 620 | | | | | |
| | Pro | Asp | Gly | Gly | Phe | Pro | Gly | Gly | Pro | Ser | Pro | Ser | Ala | Asn | Thr | Leu | |
| | 625 | | | | | 630 | | | | | 635 | | | | | 640 | |
| | Tyr | Ala | Val | Trp | Asn | Ser | Asp | Thr | Leu | Val | Arg | Ser | Thr | Tyr | Ile | Leu | |
| | | | | | 645 | | | | | 650 | | | | | 655 | | |
| | Asp | Pro | Glu | Arg | Tyr | Gly | Glu | Ile | Val | Ser | Asn | Ser | Leu | Trp | Ile | Ser | |
| 20 | | | | 660 | | | | | 665 | | | | | 670 | | | |
| | Phe | Leu | Gly | Asn | Gln | Ala | Phe | Ser | Asp | Ile | Leu | Gln | Asp | Val | Leu | Leu | |
| | | | 675 | | | | | 680 | | | | | 685 | | | | |
| | Ile | Asp | His | Pro | Gly | Leu | Ser | Ile | Thr | Ala | Lys | Ala | Leu | Gly | Ala | Tyr | |
| | | 690 | | | | | 695 | | | | | 700 | | | | | |
| | Val | Glu | His | Thr | Pro | Arg | Gln | Gly | His | Glu | Gly | Phe | Ser | Gly | Arg | Tyr | |
| | 705 | | | | | 710 | | | | | 715 | | | | | 720 | |
| 30 | Gly | Gly | Tyr | Gln | Ala | Ala | Leu | Ser | Met | Asn | Tyr | Thr | Asp | His | Thr | Thr | |
| | | | | 725 | | | | | | 730 | | | | | 735 | | |
| | Leu | Gly | Leu | Ser | Phe | Gly | Gln | Leu | Tyr | Gly | Lys | Thr | Asn | Ala | Asn | Pro | |
| | | | | 740 | | | | | 745 | | | | | 750 | | | |
| | Tyr | Asp | Ser | Arg | Cys | Ser | Glu | Gln | Met | Tyr | Leu | Leu | Ser | Phe | Phe | Gly | |
| | | | 755 | | | | | 760 | | | | | 765 | | | | |
| 40 | Gln | Phe | Pro | Ile | Val | Thr | Gln | Lys | Ser | Glu | Ala | Leu | Ile | Ser | Trp | Lys | |
| | | 770 | | | | | 775 | | | | | 780 | | | | | |
| | Ala | Ala | Tyr | Gly | Tyr | Ser | Lys | Asn | His | Leu | Asn | Thr | Thr | Tyr | Leu | Arg | |
| | 785 | | | | | 790 | | | | | 795 | | | | | 800 | |
| | Pro | Asp | Lys | Ala | Pro | Lys | Ser | Gln | Gly | Gln | Trp | His | Asn | Asn | Ser | Tyr | |
| | | | | | 805 | | | | | 810 | | | | | 815 | | |
| | Tyr | Val | Leu | Ile | Ser | Ala | Glu | His | Pro | Phe | Leu | Asn | Trp | Cys | Leu | Leu | |
| | | | | 820 | | | | | 825 | | | | | 830 | | | |
| 50 | Thr | Arg | Pro | Leu | Ala | Gln | Ala | Trp | Asp | Leu | Ser | Gly | Phe | Ile | Ser | Ala | |
| | | | | 835 | | | | 840 | | | | | 845 | | | | |
| | Glu | Phe | Leu | Gly | Gly | Trp | Gln | Ser | Lys | Phe | Thr | Glu | Thr | Gly | Asp | Leu | |
| | | 850 | | | | | 855 | | | | | 860 | | | | | |
| | Gln | Arg | Ser | Phe | Ser | Arg | Gly | Lys | Gly | Tyr | Asn | Val | Ser | Leu | Pro | Ile | |
| | 865 | | | | | 870 | | | | | 875 | | | | | 880 | |
| 60 | Gly | Cys | Ser | Ser | Gln | Trp | Phe | Thr | Pro | Phe | Lys | Lys | Ala | Pro | Ser | Thr | |
| | | | | | 885 | | | | | 890 | | | | | 895 | | |

81/83

Leu Thr Ile Lys Leu Ala Tyr Lys Pro Asp Ile Tyr Arg Val Asn Pro
 900 905 910

His Asn Ile Val Thr Val Val Ser Asn Gln Glu Ser Thr Ser Ile Ser
 915 920 925

10 Gly Ala Asn Leu Arg Arg His Gly Leu Phe Val Gln Ile His Asp Val
 930 935 940

Val Asp Leu Thr Glu Asp Thr Gln Ala Phe Leu Asn Tyr Thr Phe Asp
 945 950 955 960

Gly Lys Asn Gly Phe Thr Asn His Arg Val Ser Thr Gly Leu Lys Ser
 965 970 975

Thr Phe

20 <210> 45
 <211> 813
 <212> PRT
 <213> Chlamydia pneumoniae

 <400> 45
 Ser Ala Leu Gln Pro Thr Asp Ser Leu Thr Val
 1 5 10

30 Glu Asn Ile Ser Gln Ser Ile Lys Phe Phe Gly Asn Leu Ala Asn Phe
 15 20 25

Gly Ser Ala Ile Ser Ser Ser Pro Thr Ala Val Val Lys Phe Ile Asn
 30 35 40

Asn Thr Ala Thr Met Ser Phe Ser His Asn Phe Thr Ser Ser Gly Gly
 45 50 55

40 Gly Val Ile Tyr Gly Gly Ser Ser Leu Leu Phe Glu Asn Asn Ser Gly
 60 65 70 75

Cys Ile Ile Phe Thr Ala Asn Ser Cys Val Asn Ser Leu Lys Gly Val
 80 85 90

Thr Pro Ser Ser Gly Thr Tyr Ala Leu Gly Ser Gly Gly Ala Ile Cys
 95 100 105

Ile Pro Thr Gly Thr Phe Glu Leu Lys Asn Asn Gln Gly Lys Cys Thr
 110 115 120

50 Phe Ser Tyr Asn Gly Thr Pro Asn Asp Ala Gly Ala Ile Tyr Ala Glu
 125 130 135

Thr Cys Asn Ile Val Gly Asn Gln Gly Ala Leu Leu Leu Asp Ser Asn
 140 145 150 155

Thr Ala Ala Arg Asn Gly Gly Ala Ile Cys Ala Lys Val Leu Asn Ile
 160 165 170

60 Gln Gly Arg Gly Pro Ile Glu Phe Ser Arg Asn Arg Ala Glu Lys Gly
 175 180 185

82/83

| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | Gly | Ala | Ile | Phe | Ile | Gly | Pro | Ser | Val | Gly | Asp | Pro | Ala | Lys | Gln | Thr | |
| | | | 190 | | | | | 195 | | | | | 200 | | | | |
| | Ser | Thr | Leu | Thr | Ile | Leu | Ala | Ser | Glu | Gly | Asp | Ile | Ala | Phe | Gln | Gly | |
| | | 205 | | | | | 210 | | | | | 215 | | | | | |
| 10 | Asn | Met | Leu | Asn | Thr | Lys | Pro | Gly | Ile | Arg | Asn | Ala | Ile | Thr | Val | Glu | |
| | | 220 | | | | 225 | | | | | 230 | | | | | 235 | |
| | Ala | Gly | Gly | Glu | Ile | Val | Ser | Leu | Ser | Ala | Gln | Gly | Gly | Ser | Arg | Leu | |
| | | | | | 240 | | | | | 245 | | | | | 250 | | |
| | Val | Phe | Tyr | Asp | Pro | Ile | Thr | His | Ser | Leu | Pro | Thr | Thr | Ser | Pro | Ser | |
| | | | | 255 | | | | | 260 | | | | | 265 | | | |
| | Asn | Lys | Asp | Ile | Thr | Ile | Asn | Ala | Asn | Gly | Ala | Ser | Gly | Ser | Val | Val | |
| | | | 270 | | | | | 275 | | | | | 280 | | | | |
| 20 | Phe | Thr | Ser | Lys | Gly | Leu | Ser | Ser | Thr | Glu | Leu | Leu | Leu | Pro | Ala | Asn | |
| | | 285 | | | | | 290 | | | | | 295 | | | | | |
| | Thr | Thr | Thr | Ile | Leu | Leu | Gly | Thr | Val | Lys | Ile | Ala | Ser | Gly | Glu | Leu | |
| | | 300 | | | 305 | | | | | | 310 | | | | | 315 | |
| | Lys | Ile | Thr | Asp | Asn | Ala | Val | Val | Asn | Val | Ala | Gly | Phe | Ala | Thr | Gln | |
| | | | | | 320 | | | | | 325 | | | | | 330 | | |
| 30 | Gly | Ser | Gly | Gln | Leu | Thr | Leu | Gly | Ser | Gly | Gly | Thr | Leu | Gly | Leu | Ala | |
| | | | | 335 | | | | 340 | | | | | | 345 | | | |
| | Thr | Pro | Thr | Gly | Ala | Pro | Ala | Ala | Val | Asp | Phe | Thr | Ile | Gly | Lys | Leu | |
| | | | 350 | | | | | 355 | | | | | 360 | | | | |
| | Ala | Phe | Asp | Pro | Phe | Ser | Phe | Leu | Lys | Arg | Asp | Phe | Val | Ser | Ala | Ser | |
| | | 365 | | | | | 370 | | | | | 375 | | | | | |
| 40 | Val | Asn | Ala | Gly | Thr | Lys | Asn | Val | Thr | Leu | Thr | Gly | Ala | Leu | Val | Leu | |
| | | 380 | | | | 385 | | | | | 390 | | | | | 395 | |
| | Asp | Glu | His | Asp | Val | Thr | Asp | Leu | Tyr | Asp | Met | Val | Ser | Leu | Gln | Ser | |
| | | | | | 400 | | | | | 405 | | | | | 410 | | |
| | Pro | Val | Ala | Ile | Pro | Ile | Ala | Val | Phe | Lys | Gly | Ala | Thr | Val | Thr | Lys | |
| | | | | 445 | | | | | 420 | | | | | 425 | | | |
| | Thr | Gly | Phe | Pro | Asp | Gly | Glu | Ile | Ala | Thr | Pro | Ser | His | Tyr | Gly | Tyr | |
| | | | 430 | | | | 435 | | | | | | 440 | | | | |
| 50 | Gln | Gly | Lys | Trp | Ser | Tyr | Thr | Trp | Ser | Arg | Pro | Leu | Leu | Ile | Pro | Ala | |
| | | 445 | | | | | 450 | | | | | 455 | | | | | |
| | Pro | Asp | Gly | Gly | Phe | Pro | Gly | Gly | Pro | Ser | Pro | Ser | Ala | Asn | Thr | Leu | |
| | | 460 | | | | 465 | | | | | 470 | | | | | 475 | |
| | Tyr | Ala | Val | Trp | Asn | Ser | Asp | Thr | Leu | Val | Arg | Ser | Thr | Tyr | Ile | Leu | |
| | | | | | 480 | | | | 485 | | | | | | 490 | | |
| 60 | Asp | Pro | Glu | Arg | Tyr | Gly | Glu | Ile | Val | Ser | Asn | Ser | Leu | Trp | Ile | Ser | |
| | | | | 495 | | | | | 500 | | | | | 505 | | | |

83 / 83

60